Final datasheet

EasyPIM™ module with TRENCHSTOP™IGBT7 and emitter controlled 7 diode and NTC / pre-applied thermal interface material

Features


Typical appearance

- Electrical features
  - V_{CES} = 650 V
  - $I_{C\ nom}$ = 20 A / I_{CRM} = 40 A
  - Low inductive design
  - Low switching losses
  - Suitable Infineon gate drivers can be found under https://www.infineon.com/gdfinder
- Mechanical features
  - Solder contact technology
  - Integrated NTC temperature sensor
  - Rugged mounting due to integrated mounting clamps
  - Pre-applied thermal interface material

Potential applications

- Heat pump

Product validation

- Qualified for industrial applications according to the relevant tests of IEC 60747, 60749 and 60068

Description

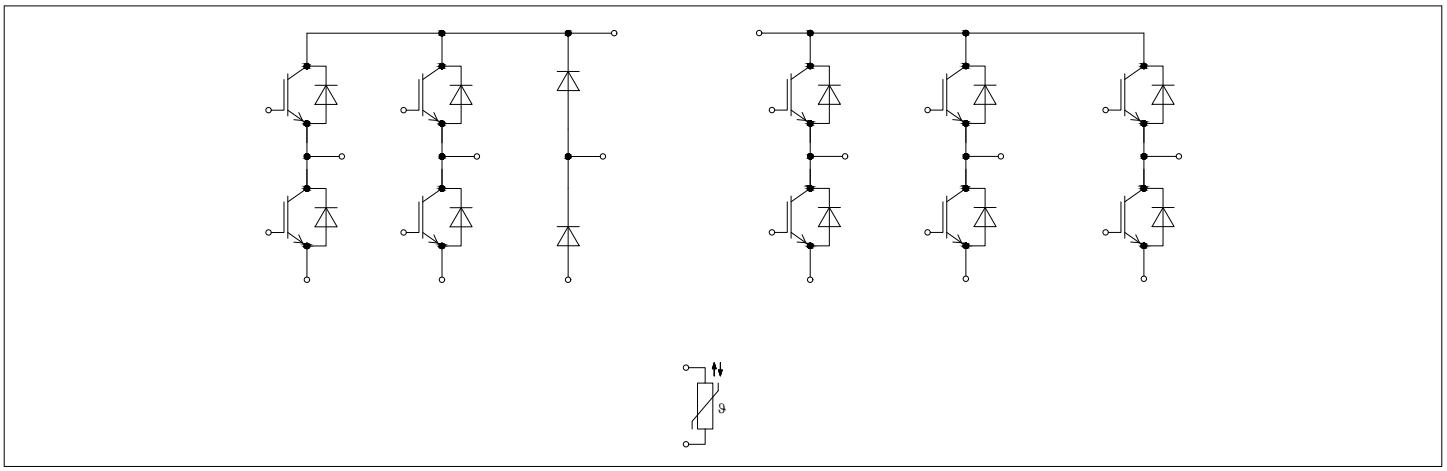


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1 Package

Table 1 Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, f = 50 Hz, *t* = 1 min	2.5	kV
Isolation test voltage NTC	$V_{ISOL(NTC)}$	RMS, f = 50 Hz, *t* = 1 min	1.5	kV
Internal isolation		basic insulation (class 1, IEC 61140)	Al_2O_3	
Comparative tracking index	*CTI*		> 200	
Relative thermal index (electrical)	*RTI*	housing	140	°C

Table 2 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Stray inductance module	L_{sCE}			25		nH
Module lead resistance, terminals - chip	$R_{CC'+EE'}$	T_H = 25 °C, per switch		12		mΩ
Storage temperature	T_{stg}		-40		125	°C
Maximum baseplate operation temperature	T_{BPmax}				125	°C
Mounting force per clamp	*F*		20		50	N
Weight	*G*			24		g

***Note**: The current under continuous operation is limited to 30 A rms per connector pin.*
Storage and Shipment of modules with TIM => see AN2012-07

2 IGBT, Inverter

Table 3 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	650	V
Continuous DC collector current	I_{CDC}	$T_{vj\,max}$ = 175 °C	T_H = 80 °C	20	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj\,op}$		40	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 4 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\,sat}$	I_C = 20 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.32	1.80	V
			T_{vj} = 125 °C		1.42		
			T_{vj} = 175 °C		1.45		
Gate threshold voltage	V_{GEth}	I_C = 0.2 mA, V_{CE} = V_{GE}, T_{vj} = 25 °C		4.30	5.00	5.70	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CC} = 300 V, T_{vj} = 25 °C			0.22		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			0		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			1.31		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.013		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25 °C			0.005	mA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA
Turn-on delay time (inductive load)	t_{don}	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Gon} = 11 Ω	T_{vj} = 25 °C		0.026		µs
			T_{vj} = 125 °C		0.027		
			T_{vj} = 175 °C		0.027		
Rise time (inductive load)	t_r	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Gon} = 11 Ω	T_{vj} = 25 °C		0.029		µs
			T_{vj} = 125 °C		0.029		
			T_{vj} = 175 °C		0.029		
Turn-off delay time (inductive load)	t_{doff}	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Goff} = 5.6 Ω	T_{vj} = 25 °C		0.118		µs
			T_{vj} = 125 °C		0.143		
			T_{vj} = 175 °C		0.150		
Fall time (inductive load)	t_f	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Goff} = 5.6 Ω	T_{vj} = 25 °C		0.059		µs
			T_{vj} = 125 °C		0.092		
			T_{vj} = 175 °C		0.118		
Turn-on energy loss per pulse	E_{on}	I_C = 20 A, V_{CC} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Gon} = 11 Ω, di/dt = 600 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.047		mJ
			T_{vj} = 125 °C		0.122		
			T_{vj} = 175 °C		0.162		
Turn-off energy loss per pulse	E_{off}	I_C = 20 A, V_{CC} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Goff} = 5.6 Ω, dv/dt = 3400 V/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.56		mJ
			T_{vj} = 125 °C		0.69		
			T_{vj} = 175 °C		0.758		
SC data	I_{SC}	V_{GE} = 15 V, V_{CC} = 400 V, V_{CEmax}=V_{CES}-L_{sCE}*di/dt	t_P = 3 µs, T_{vj} = 150 °C		110		A

(table continues...)

Table 4 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, Valid with IFX pre-applied Thermal Interface Material			2.37	K/W
Temperature under switching conditions	$T_{vj\,op}$		-40		175	°C

***Note**: Tvj op > 150°C is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.*

3 Diode, Inverter

Table 5 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	650	V
Continuous DC forward current	I_F			20	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		40	A
I^2t - value	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	53	A^2s
			T_{vj} = 175 °C	43	

Table 6 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 20 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.64	2.15	V
			T_{vj} = 125 °C		1.52		
			T_{vj} = 175 °C		1.45		
Peak reverse recovery current	I_{RM}	V_{CC} = 300 V, I_F = 20 A, V_{GE} = -15 V, -di$_F$/dt = 600 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		26.1		A
			T_{vj} = 125 °C		31.1		
			T_{vj} = 175 °C		35.1		
Recovered charge	Q_r	V_{CC} = 300 V, I_F = 20 A, V_{GE} = -15 V, -di$_F$/dt = 600 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.64		µC
			T_{vj} = 125 °C		1.45		
			T_{vj} = 175 °C		1.65		
Reverse recovery energy	E_{rec}	V_{CC} = 300 V, I_F = 20 A, V_{GE} = -15 V, -di$_F$/dt = 600 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.19		mJ
			T_{vj} = 125 °C		0.427		
			T_{vj} = 175 °C		0.482		

(table continues...)

Table 6 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction to heat sink	R_{thJH}	per diode, Valid with IFX pre-applied Thermal Interface Material			2.72	K/W
Temperature under switching conditions	$T_{vj\,op}$		-40		175	°C

***Note**: Tvj op > 150°C is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.*

4 IGBT, T7-T10

Table 7 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	650	V
Implemented collector current	I_{CN}			35	A
Continuous DC collector current	I_{CDC}	$T_{vj\,max}$ = 175 °C	T_H = 65 °C	25	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj\,op}$		70	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 8 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\,sat}$	I_C = 20 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.32	1.67	V
			T_{vj} = 125 °C		1.39		
			T_{vj} = 150 °C		1.41		
Gate threshold voltage	V_{GEth}	I_C = 0.35 mA, V_{CE} = V_{GE}, T_{vj} = 25 °C		3.85	4.60	5.35	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CC} = 300 V, T_{vj} = 25 °C			0.152		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			0		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			1.94		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.007		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25 °C			0.019	mA

(table continues...)

Table 8 (continued) Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA
Turn-on delay time (inductive load)	t_{don}	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Gon} = 15 Ω	T_{vj} = 25 °C		0.023		µs
			T_{vj} = 125 °C		0.021		
			T_{vj} = 150 °C		0.019		
Rise time (inductive load)	t_r	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Gon} = 15 Ω	T_{vj} = 25 °C		0.033		µs
			T_{vj} = 125 °C		0.034		
			T_{vj} = 150 °C		0.034		
Turn-off delay time (inductive load)	t_{doff}	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Goff} = 15 Ω	T_{vj} = 25 °C		0.088		µs
			T_{vj} = 125 °C		0.108		
			T_{vj} = 150 °C		0.109		
Fall time (inductive load)	t_f	I_C = 20 A, V_{CC} = 300 V, V_{GE} = ±15 V, R_{Goff} = 15 Ω	T_{vj} = 25 °C		0.015		µs
			T_{vj} = 125 °C		0.018		
			T_{vj} = 150 °C		0.018		
Turn-on energy loss per pulse	E_{on}	I_C = 20 A, V_{CC} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Gon} = 15 Ω, di/dt = 580 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.076		mJ
			T_{vj} = 125 °C		0.149		
			T_{vj} = 150 °C		0.169		
Turn-off energy loss per pulse	E_{off}	I_C = 20 A, V_{CC} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Goff} = 15 Ω, dv/dt = 7100 V/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.41		mJ
			T_{vj} = 125 °C		0.462		
			T_{vj} = 150 °C		0.474		
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, Valid with IFX pre-applied Thermal Interface Material				1.85	K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		150	°C

5 Diode, D7-D10

Table 9 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	650	V
Continuous DC forward current	I_F			25	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		50	A

(table continues...)

Table 9 (continued) Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
I^2t - value	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	76	A^2s
			T_{vj} = 150 °C	60	

Table 10 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 20 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.55	1.95	V
			T_{vj} = 125 °C		1.48		
			T_{vj} = 150 °C		1.44		
Peak reverse recovery current	I_{RM}	V_{CC} = 300 V, I_F = 20 A, -di$_F$/dt = 580 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		22.8		A
			T_{vj} = 125 °C		25.2		
			T_{vj} = 150 °C		25.8		
Recovered charge	Q_r	V_{CC} = 300 V, I_F = 20 A, -di$_F$/dt = 580 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.83		µC
			T_{vj} = 125 °C		1.48		
			T_{vj} = 150 °C		1.73		
Reverse recovery energy	E_{rec}	V_{CC} = 300 V, I_F = 20 A, -di$_F$/dt = 580 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.239		mJ
			T_{vj} = 125 °C		0.417		
			T_{vj} = 150 °C		0.486		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, Valid with IFX pre-applied Thermal Interface Material				2.53	K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		150	°C

6 Diode, Rectifier

Table 11 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	1600	V
Maximum RMS forward current per chip	I_{FRMSM}	T_H = 115 °C		25	A
Maximum RMS current at rectifier output	I_{RMSM}	T_H = 115 °C		25	A
I^2t - value	I^2t	t_p = 10 ms, V_R = 0 V	T_{vj} = 125 °C	525	A^2s
			T_{vj} = 150 °C	449	

Table 12 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 20 A	T_{vj} = 150 °C		0.90		V
Reverse current	I_r	T_{vj} = 150 °C, V_R = 1600 V			1		mA
Thermal resistance, junction to heat sink	R_{thJH}	per diode, Valid with IFX pre-applied Thermal Interface Material				1.40	K/W
Temperature under switching conditions	$T_{vj, op}$			-40		150	°C

7 NTC-Thermistor

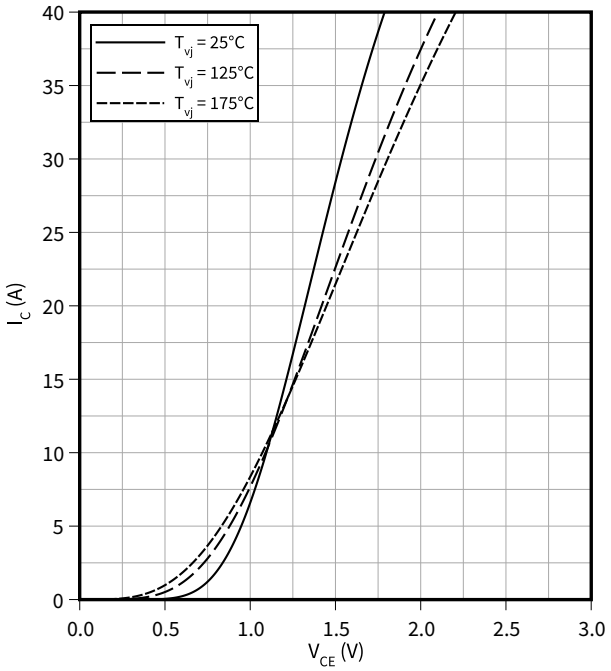
Table 13 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Rated resistance	R_{25}	T_{NTC} = 25 °C		5		kΩ
Deviation of R_{100}	$\Delta R/R$	T_{NTC} = 100 °C, R_{100} = 493 Ω	-5		5	%
Power dissipation	P_{25}	T_{NTC} = 25 °C			20	mW
B-value	$B_{25/50}$	$R_2 = R_{25} \exp[B_{25/50}(1/T_2-1/(298{,}15\ K))]$		3375		K
B-value	$B_{25/80}$	$R_2 = R_{25} \exp[B_{25/80}(1/T_2-1/(298{,}15\ K))]$		3411		K
B-value	$B_{25/100}$	$R_2 = R_{25} \exp[B_{25/100}(1/T_2-1/(298{,}15\ K))]$		3433		K

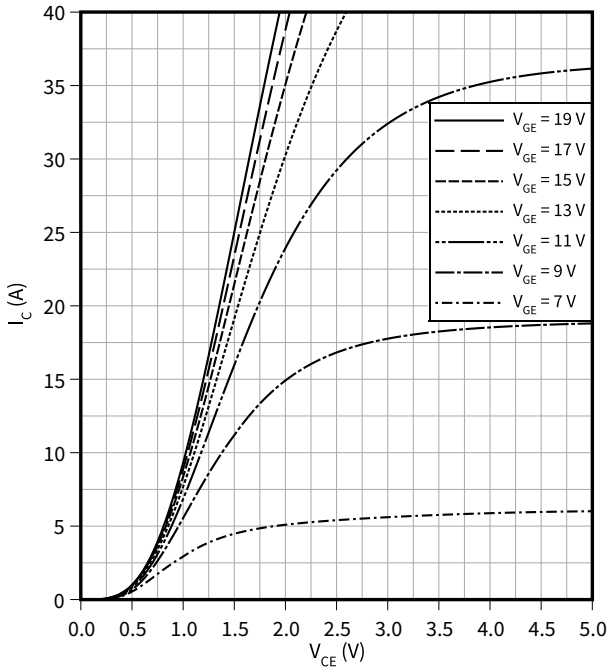
***Note**: For an analytical description of the NTC characteristics please refer to AN2009-10, chapter 4*

8 Characteristics diagrams

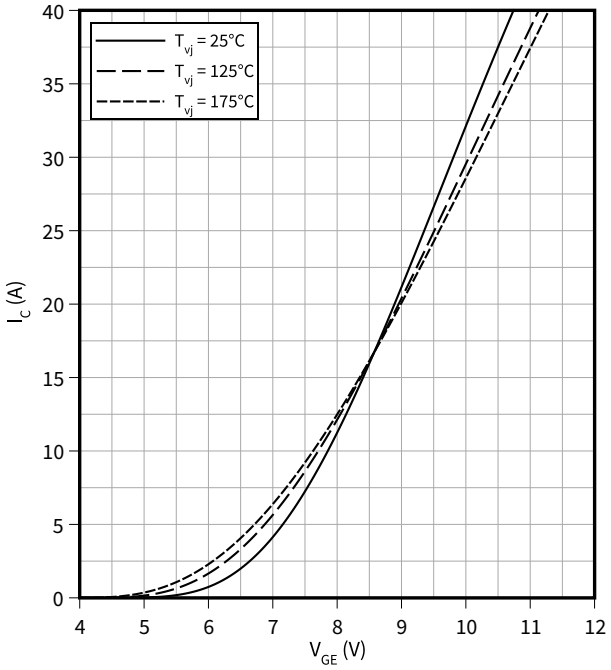
Output characteristic (typical), IGBT, Inverter
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



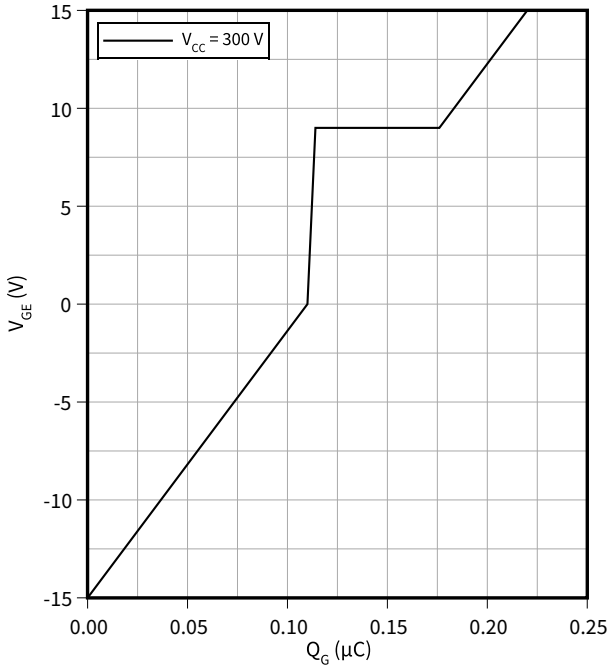
Output characteristic field (typical), IGBT, Inverter
$I_C = f(V_{CE})$
$T_{vj} = 175$ °C



Transfer characteristic (typical), IGBT, Inverter
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



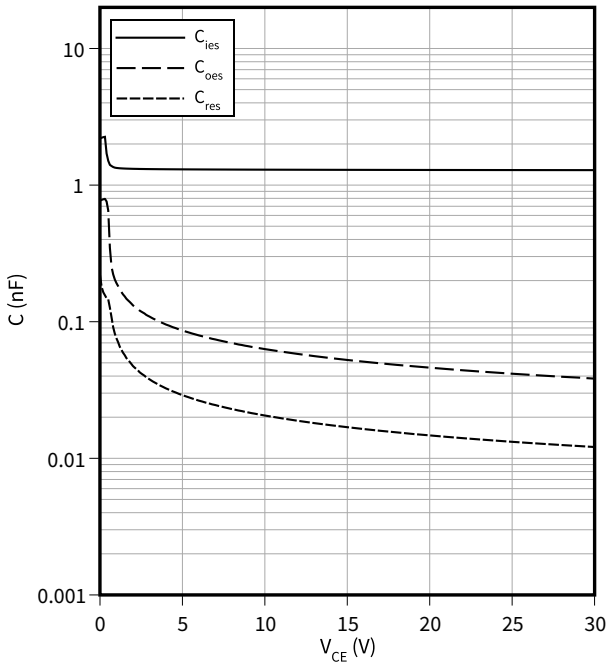
Gate charge characteristic (typical), IGBT, Inverter
$V_{GE} = f(Q_G)$
$I_C = 20$ A, $T_{vj} = 25$ °C



Capacity characteristic (typical), IGBT, Inverter

$C = f(V_{CE})$

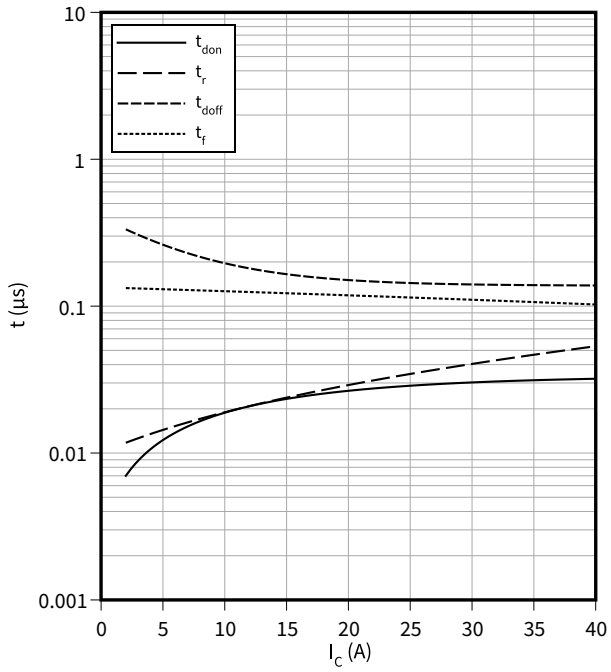
$f = 100$ kHz, $V_{GE} = 0$ V, $T_{vj} = 25$ °C



Switching times (typical), IGBT, Inverter

$t = f(I_C)$

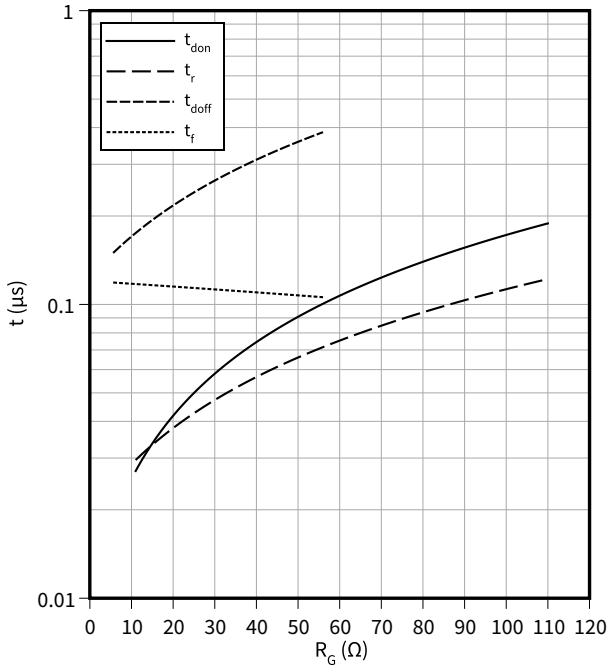
$R_{Goff} = 5.6\ \Omega$, $R_{Gon} = 11\ \Omega$, $V_{GE} = \pm 15$ V, $V_{CC} = 300$ V, $T_{vj} = 175$ °C



Switching times (typical), IGBT, Inverter

$t = f(R_G)$

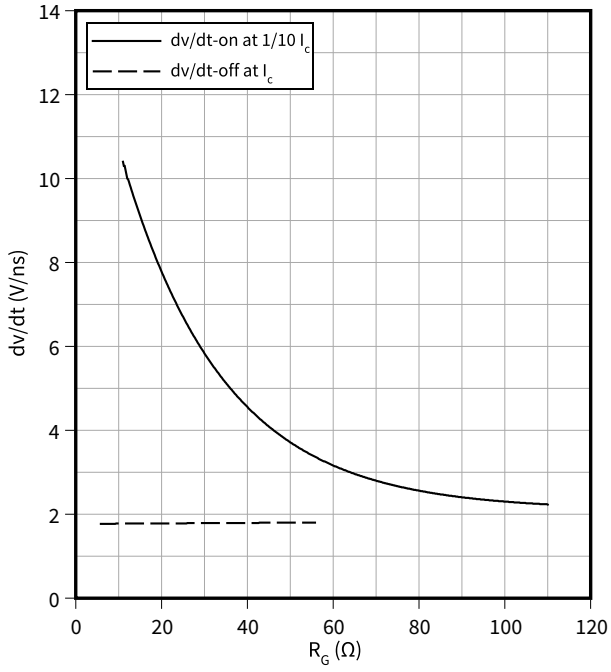
$V_{GE} = \pm 15$ V, $I_C = 20$ A, $V_{CC} = 300$ V, $T_{vj} = 175$ °C



Voltage slope (typical), IGBT, Inverter

$dv/dt = f(R_G)$

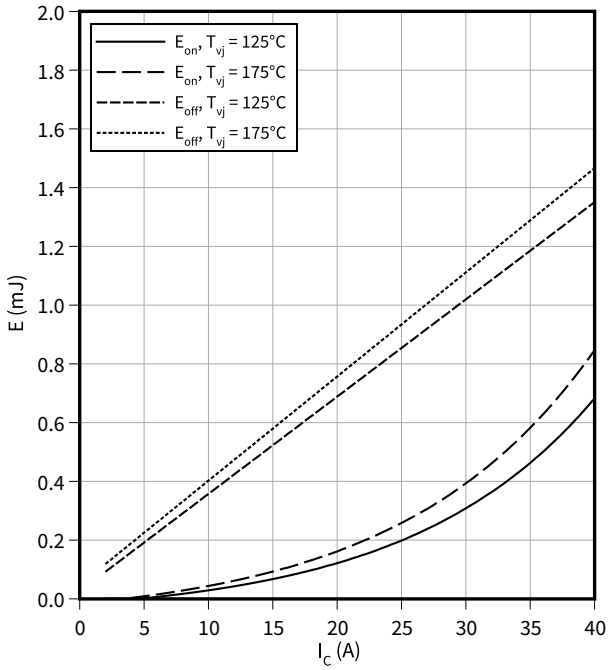
$V_{GE} = \pm 15$ V, $I_C = 20$ A, $V_{CC} = 300$ V, $T_{vj} = 25$ °C



Switching losses (typical), IGBT, Inverter

$E = f(I_C)$

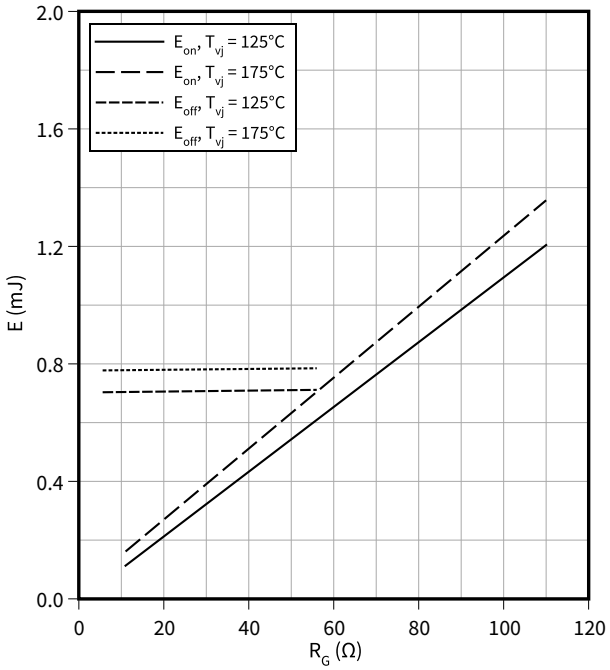
$R_{Goff} = 5.6\ \Omega$, $R_{Gon} = 11\ \Omega$, $V_{GE} = \pm 15\ V$, $V_{CC} = 300\ V$



Switching losses (typical), IGBT, Inverter

$E = f(R_G)$

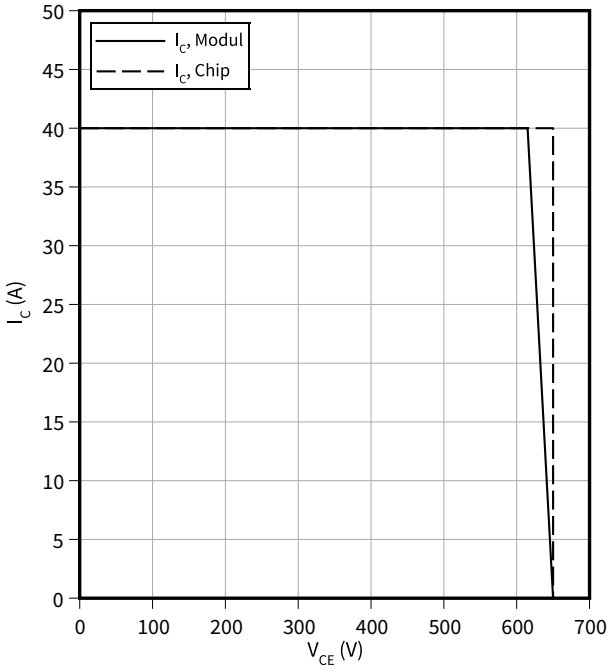
$V_{GE} = \pm 15\ V$, $I_C = 20\ A$, $V_{CC} = 300\ V$



Reverse bias safe operating area (RBSOA), IGBT, Inverter

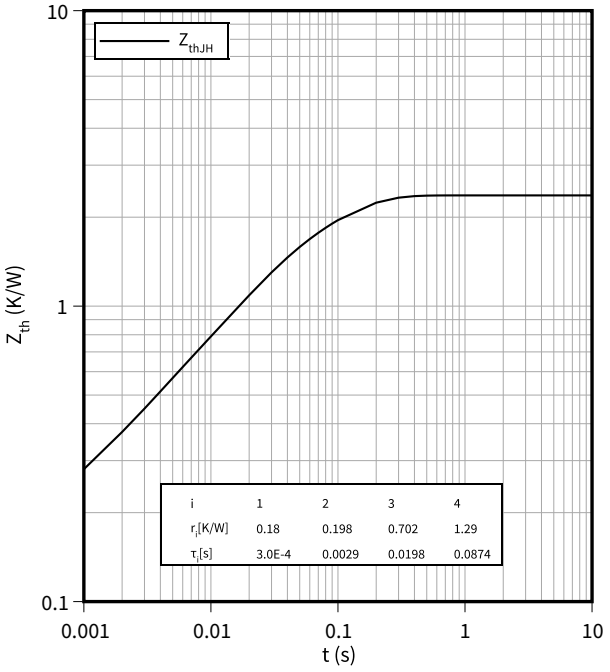
$I_C = f(V_{CE})$

$R_{Goff} = 5.6\ \Omega$, $V_{GE} = \pm 15\ V$, $T_{vj} = 175\ °C$



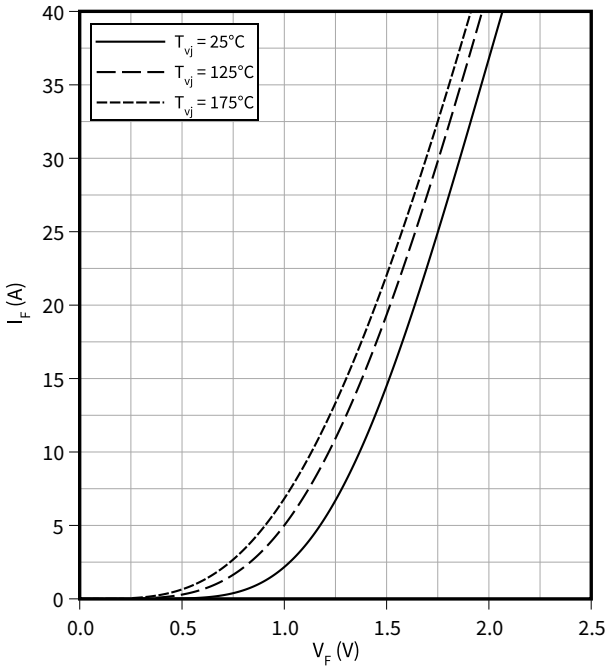
Transient thermal impedance, IGBT, Inverter

$Z_{th} = f(t)$



forward characteristic of Diode (typical), Diode, Inverter

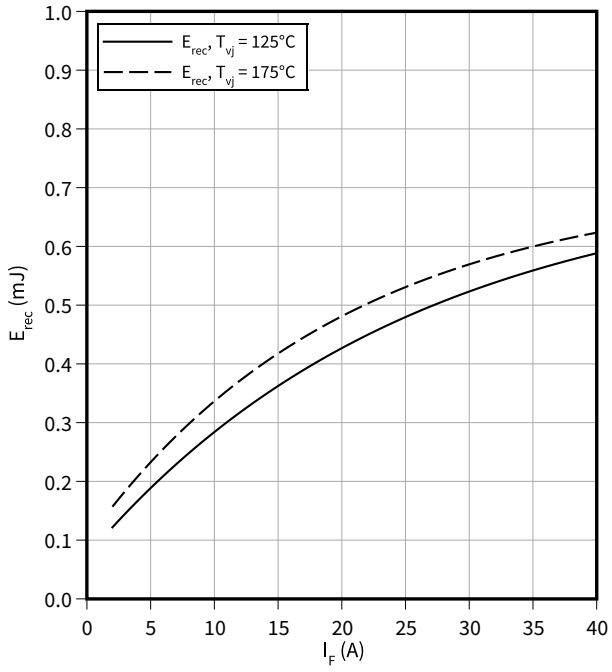
$I_F = f(V_F)$



switching losses Diode (typical), Diode, Inverter

$E_{rec} = f(I_F)$

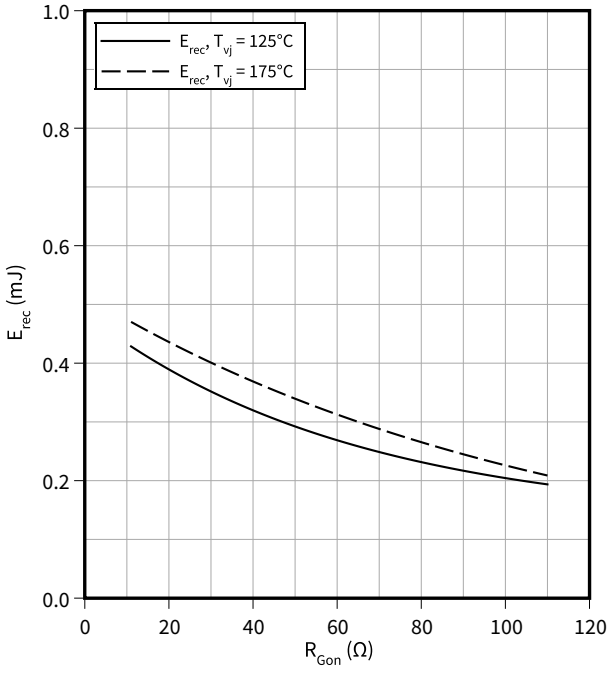
$R_{Gon} = 11\ \Omega$, $V_{CC} = 300\ V$



switching losses Diode (typical), Diode, Inverter

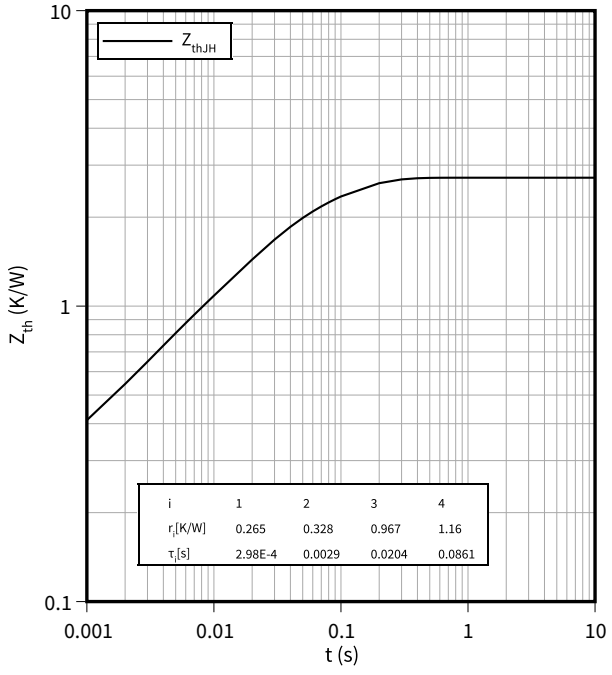
$E_{rec} = f(R_{Gon})$

$I_F = 20\ A$, $V_{CC} = 300\ V$



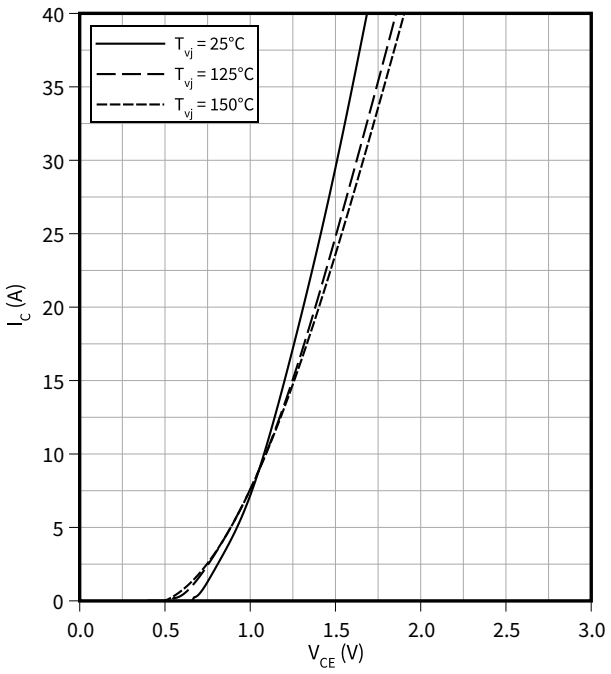
Transient thermal impedance, Diode, Inverter

$Z_{th} = f(t)$



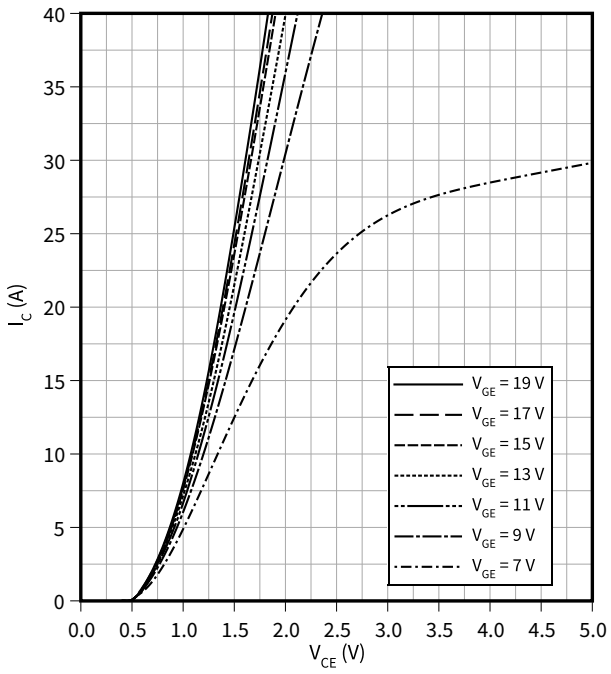
Output characteristic (typical), IGBT, T7-T10

$I_C = f(V_{CE})$
$V_{GE} = 15$ V



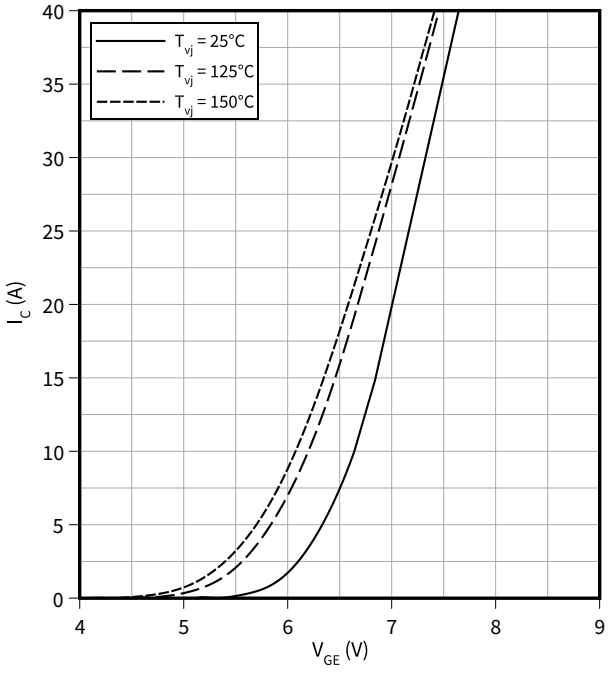
Output characteristic field (typical), IGBT, T7-T10

$I_C = f(V_{CE})$
$T_{vj} = 150$ °C



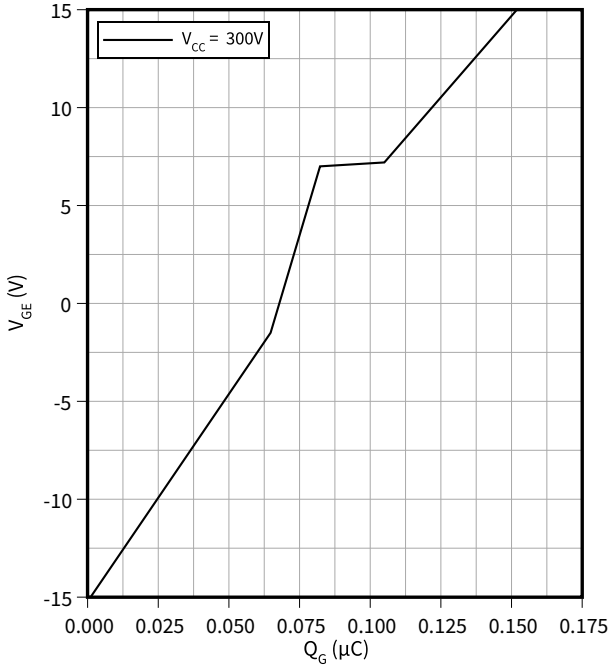
Transfer characteristic (typical), IGBT, T7-T10

$I_C = f(V_{GE})$
$V_{CE} = 20$ V



Gate charge characteristic (typical), IGBT, T7-T10

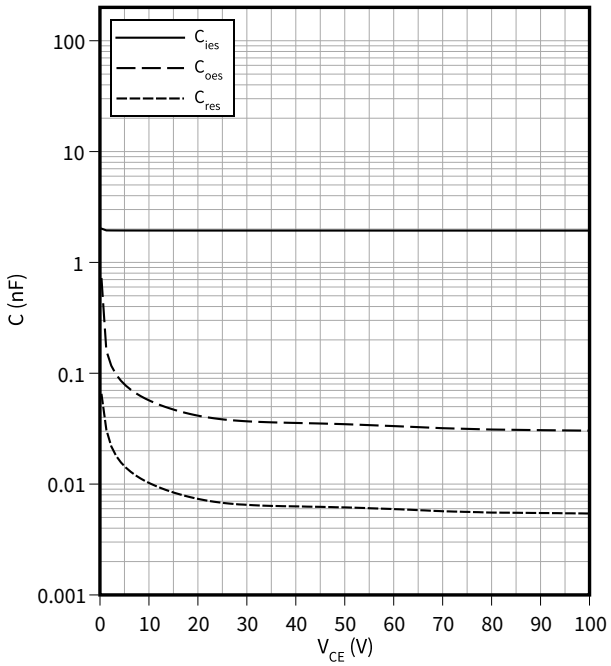
$V_{GE} = f(Q_G)$
$I_C = 35$ A, $T_{vj} = 25$ °C



Capacity characteristic (typical), IGBT, T7-T10

$C = f(V_{CE})$

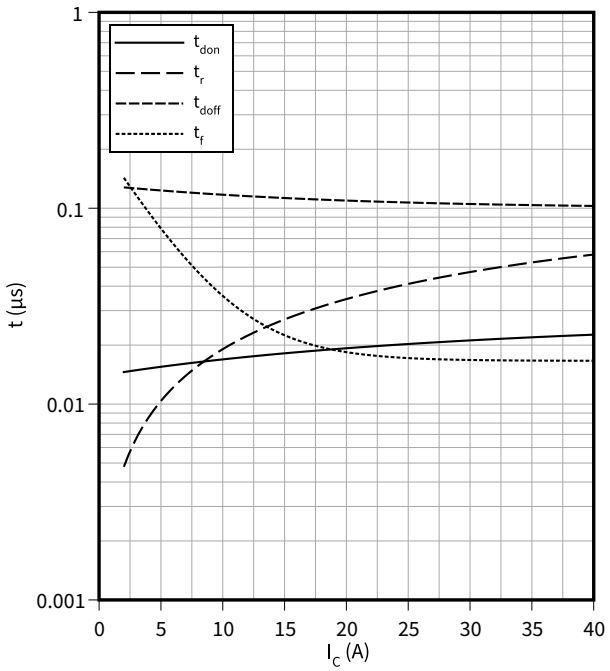
$f = 100\ kHz$, $V_{GE} = 0\ V$, $T_{vj} = 25\ °C$



Switching times (typical), IGBT, T7-T10

$t = f(I_C)$

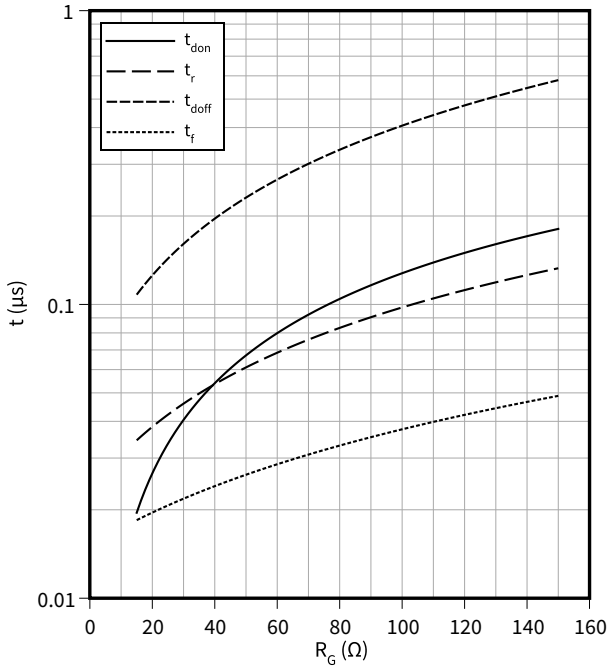
$R_{Goff} = 15\ \Omega$, $R_{Gon} = 15\ \Omega$, $V_{GE} = \pm 15\ V$, $V_{CC} = 300\ V$, $T_{vj} = 150\ °C$



Switching times (typical), IGBT, T7-T10

$t = f(R_G)$

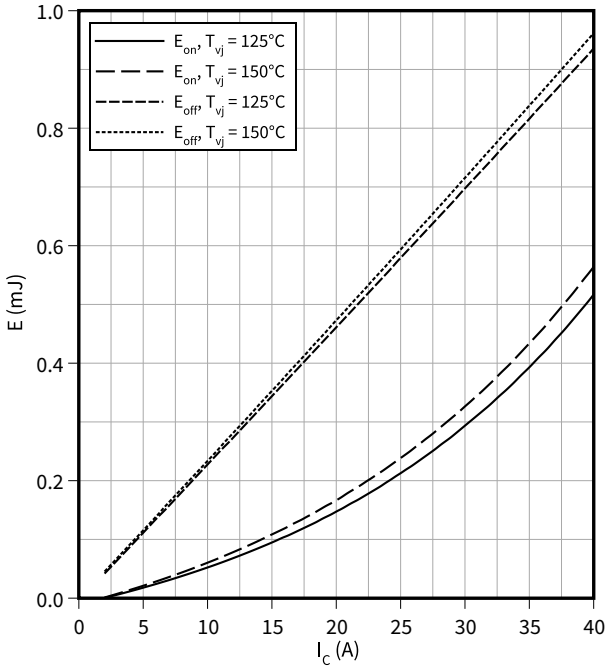
$V_{GE} = \pm 15\ V$, $I_C = 20\ A$, $V_{CC} = 300\ V$, $T_{vj} = 150\ °C$



Switching losses (typical), IGBT, T7-T10

$E = f(I_C)$

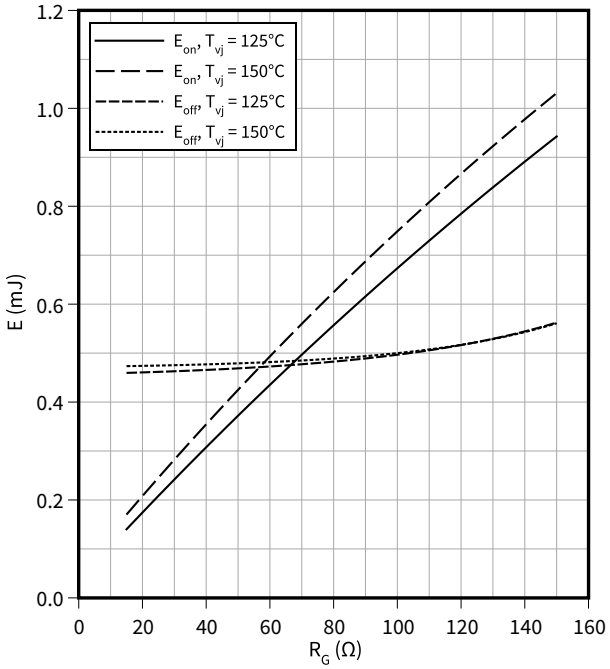
$R_{Goff} = 15\ \Omega$, $R_{Gon} = 15\ \Omega$, $V_{GE} = \pm 15\ V$, $V_{CC} = 300\ V$



Switching losses (typical), IGBT, T7-T10

$E = f(R_G)$

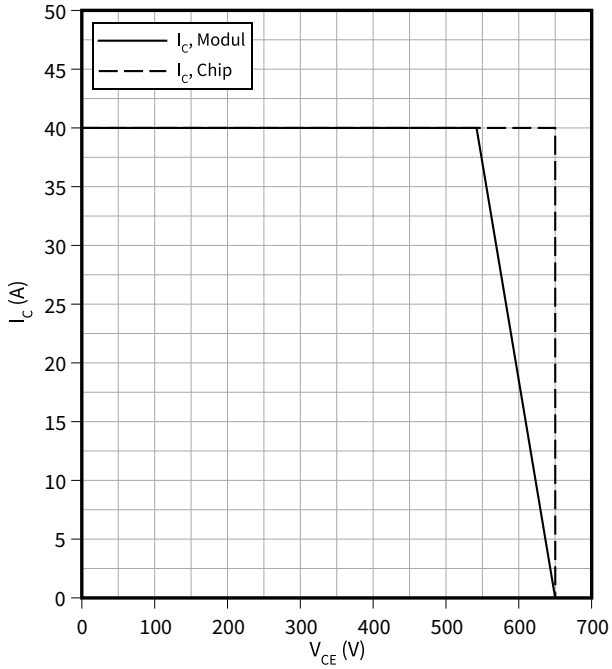
$V_{GE} = \pm 15$ V, $I_C = 20$ A, $V_{CC} = 300$ V



Reverse bias safe operating area (RBSOA), IGBT, T7-T10

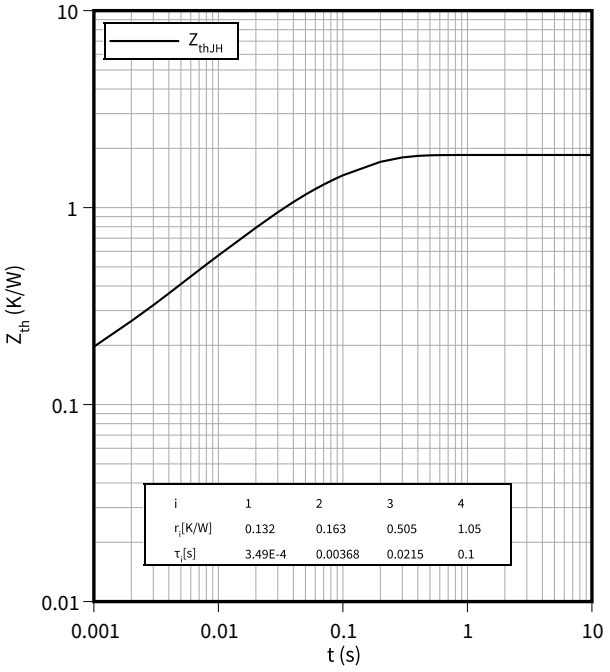
$I_C = f(V_{CE})$

$R_{Goff} = 15\ \Omega$, $V_{GE} = \pm 15$ V, $T_{vj} = 150$ °C



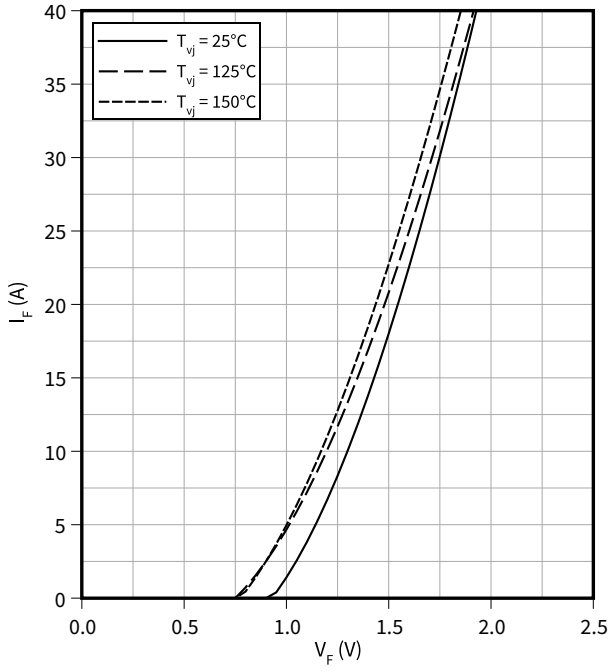
Transient thermal impedance, IGBT, T7-T10

$Z_{th} = f(t)$



Forward characteristic (typical), Diode, D7-D10

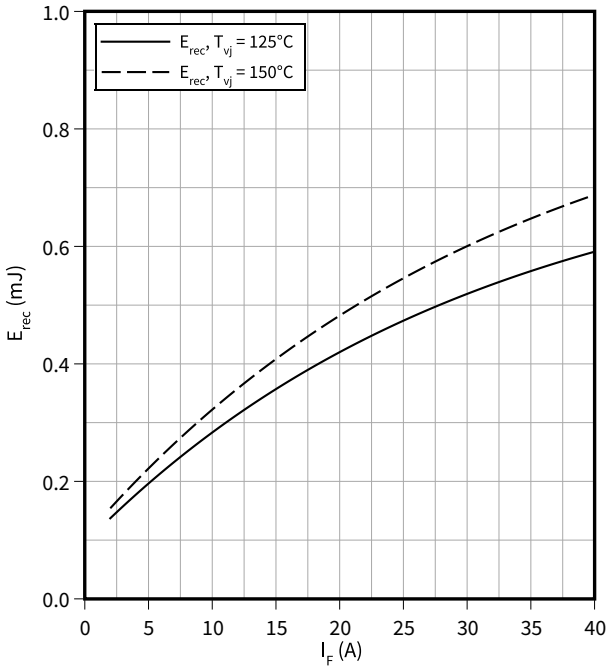
$I_F = f(V_F)$



Switching losses (typical), Diode, D7-D10

$E_{rec} = f(I_F)$

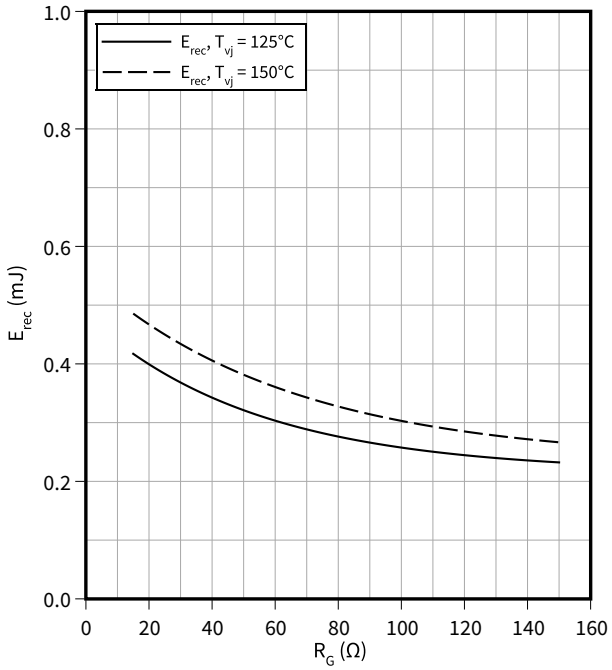
$R_{Gon} = 15\ \Omega$, $V_{CC} = 300\ V$



Switching losses (typical), Diode, D7-D10

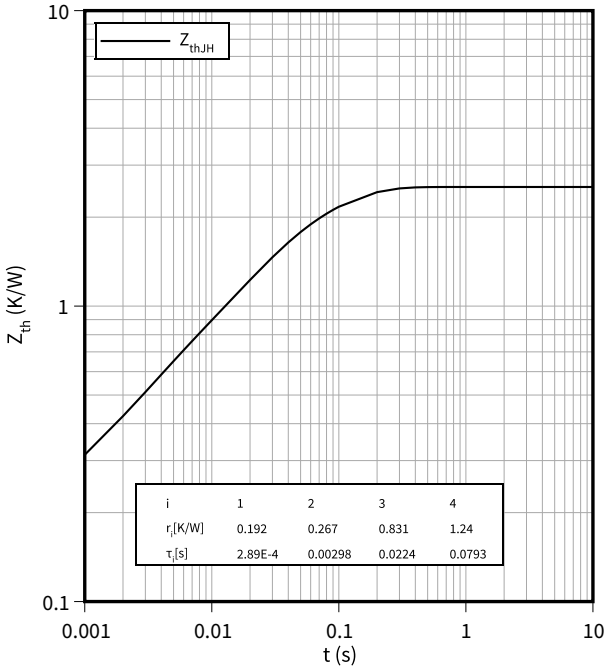
$E_{rec} = f(R_G)$

$I_F = 20\ A$, $V_{CC} = 300\ V$



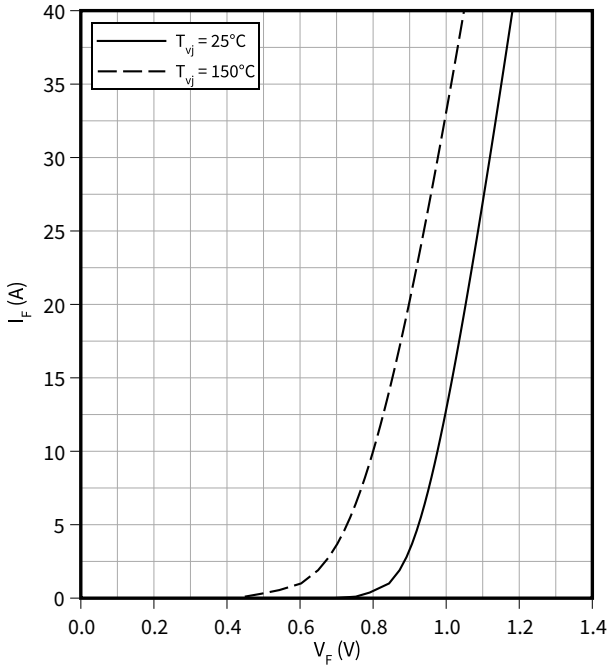
Transient thermal impedance, Diode, D7-D10

$Z_{th} = f(t)$



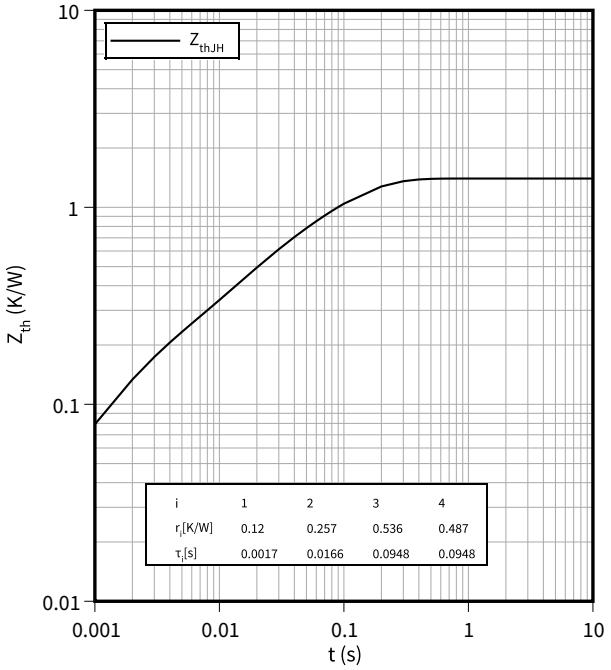
Forward characteristic (typical), Diode, Rectifier

$I_F = f(V_F)$



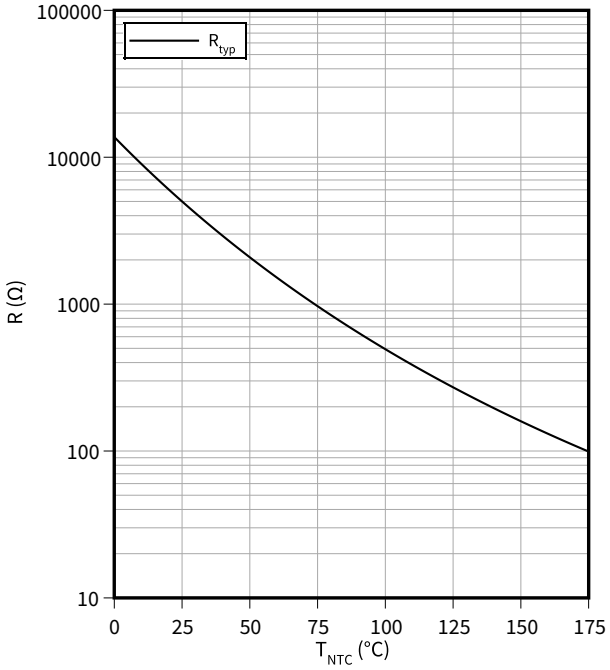
Transient thermal impedance, Diode, Rectifier

$Z_{th} = f(t)$



Temperature characteristic (typical), NTC-Thermistor

$R = f(T_{NTC})$



9 Circuit diagram

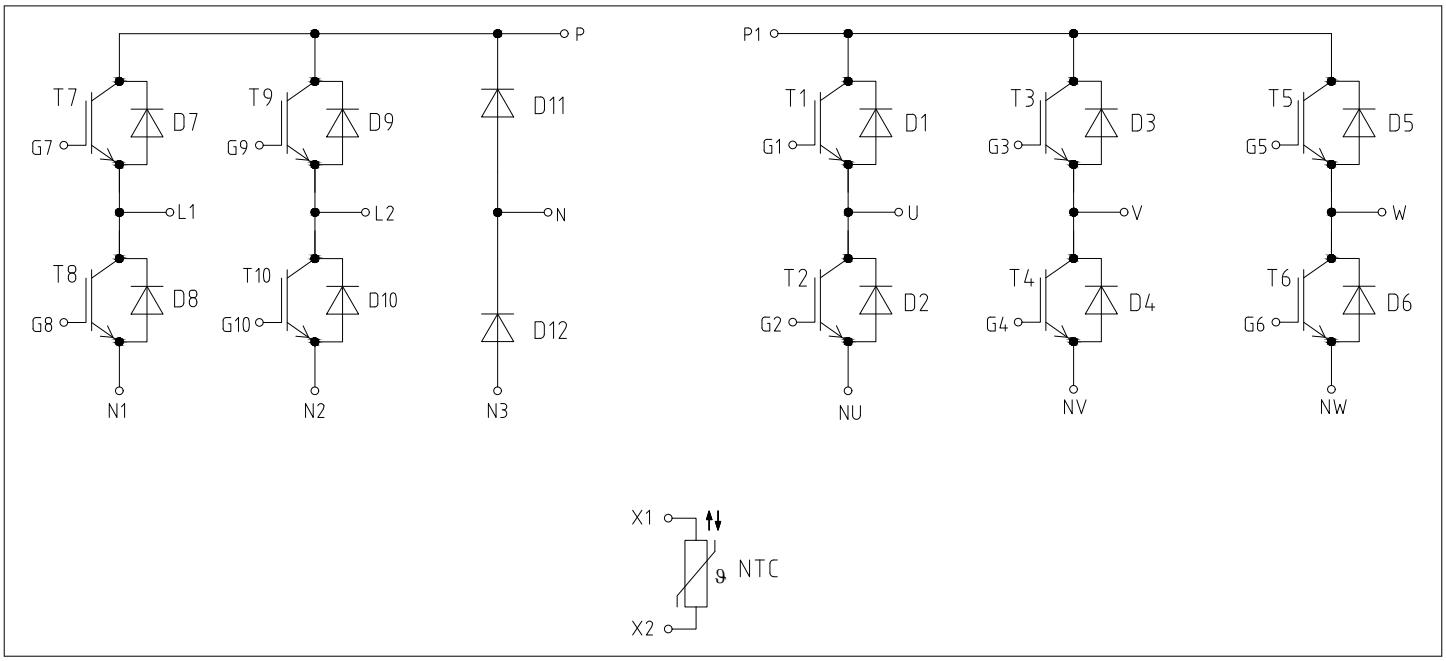


Figure 1

10 Package outlines

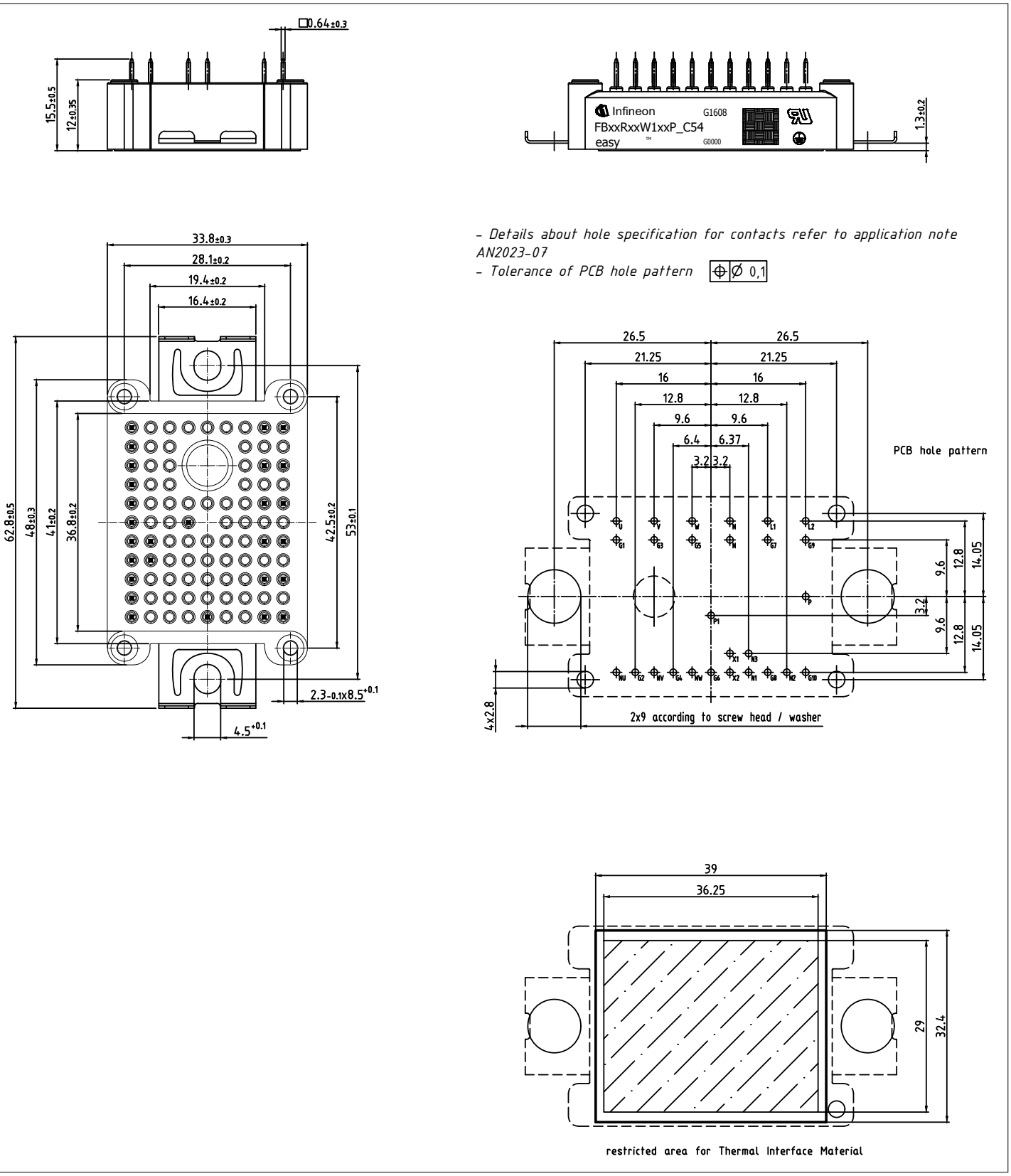


Figure 2

11 Module label code

Module label code			
Code format	Data Matrix		Barcode Code128
Encoding	ASCII text		Code Set A
Symbol size	16x16		23 digits
Standard	IEC24720 and IEC16022		IEC8859-1
Code content	*Content* Module serial number Module material number Production order number Date code (production year) Date code (production week)	*Digit* 1 – 5 6 - 11 12 - 19 20 – 21 22 – 23	*Example* 71549 142846 55054991 15 30
Example	71549142846550549911530		71549142846550549911530

Figure 3

Revision history

Document revision	Date of release	Description of changes
0.10	2025-01-24	Initial version
0.20	2025-02-25	Target datasheet
1.00	2025-07-09	Final datasheet

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Edition 2025-07-09

Published by

Infineon Technologies AG

81726 Munich, Germany

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Document reference
IFX-ABK912-003

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