

Final datasheet

CoolSiC™ 1200 V SiC MOSFET G2 and Schottky diode G5 : Boost topology with top side cooling and .XT interconnection technology

Features

- $V_{DS} = 1200 \text{ V}$ at $T_{vj} = 25^\circ\text{C}$
- $I_{DDC} = 42 \text{ A}$ at $T_c = 25^\circ\text{C}$
- $R_{DS(on)} = 39.6 \text{ m}\Omega$ at $V_{GS} = 18 \text{ V}$, $T_{vj} = 25^\circ\text{C}$
- $I_F = 30 \text{ A}$
- Internal layout optimized for fast switching
- Very low switching losses and no reverse recovery current
- High surge current capable Schottky diode
- Short circuit withstand time $2 \mu\text{s}$
- Benchmark gate threshold voltage, $V_{GS(th)} = 4.2 \text{ V}$
- .XT interconnection technology for best-in-class thermal performance
- Suitable Infineon gate drivers can be found under <https://www.infineon.com/gdfinder>

Potential applications

- String inverter
- EV Charging
- DIN Rail & Rack Mount (Power Supply)
- Commercial Lighting Fixture

Product validation

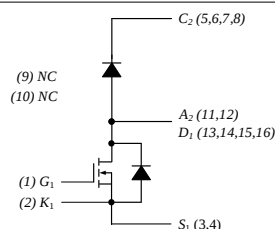
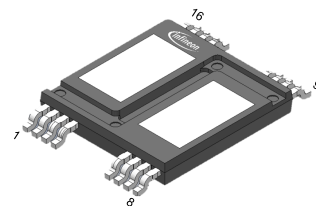
- Qualified for industrial applications according to the relevant tests of JEDEC47/20/22

Description

Pin definition:

- 1 – Gate (G_1)
- 2 – Kelvin sense (K_1)
- 3-4 – Source (S_1)
- 5-8 & Case 2 – Cathode (C_2)
- 9, 10 – not connected (NC)
- 11-12 – Anode (A_2)
- 13-16 & Case 1 – Drain (D_1)

Note: The source and sense pins are not exchangeable, their exchange might lead to malfunction



Type	Package	Marking
IMSQ120R040M2HB	PG-HDSOP-16-U03	12M2B040



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1 Package

Table 1 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Storage temperature	T_{stg}		-55		150	°C
Soldering temperature	T_{sold}	Reflow soldering (MSL2 according to JEDEC J-STD-020)			260	°C
Thermal resistance, junction-ambient	$R_{th(j-a)}$				62	K/W
MOSFET/body diode thermal resistance, junction-case	$R_{th(j-c)}$			0.4	0.52	K/W
Schottky diode thermal resistance, junction-case	$R_{th(j-c)}$			0.23	0.3	K/W
Comparative Tracking Index	CTI	IEC 60112 (material group 1 according to IEC 60664-1)	600			V

2 MOSFET

Table 2 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Drain-source voltage	V_{DSS}	$T_{vj} \geq 25\text{ °C}$		1200	V
Continuous DC drain current for $R_{th(j-c,max)}$, limited by $T_{vj(max)}$	I_{DDC}	$V_{GS} = 18\text{ V}$	$T_c = 25\text{ °C}$	55	A
			$T_c = 100\text{ °C}$	39	
Peak drain current, t_p limited by $T_{vj(max)}$ ¹⁾	I_{DM}	$V_{GS} = 18\text{ V}$		195	A
Gate-source voltage, max. transient voltage	V_{GS}	$t_p \leq 0.5\text{ }\mu\text{s}$, $D < 0.01$		-10/25	V
Gate-source voltage, max. static voltage ²⁾	V_{GS}			-7/23	V
Avalanche energy, single pulse	E_{AS}	$I_D = 17.5\text{ A}$, $V_{DD} = 50\text{ V}$, $L = 1.4\text{ mH}$, $T_{vj(start)} = 25\text{ °C}$		220	mJ
Avalanche energy, repetitive	E_{AR}	$I_D = 17.5\text{ A}$, $V_{DD} = 50\text{ V}$, $L = 7.2\text{ }\mu\text{H}$, $T_{vj(start)} = 25\text{ °C}$		1.1	mJ
Short-circuit withstand time	t_{SC}	$V_{DD} \leq 800\text{ V}$, $V_{DS,peak} < 1200\text{ V}$, $V_{GS(on)} = 15\text{ V}$, $T_{vj(start)} = 25\text{ °C}$		2	μs
Power dissipation, limited by $T_{vj(max)}$	P_{tot}	$T_c = 25\text{ °C}$		290	W
		$T_c = 100\text{ °C}$		140	

1) Verified by design.

2) The maximum gate-source voltage in the application design should be in accordance to IPC-9592B.

Table 3 Recommended values

Parameter	Symbol	Note or test condition	Values	Unit
Recommended turn-on gate voltage	$V_{GS(on)}$		15...18	V
Recommended turn-off gate voltage	$V_{GS(off)}$		-5...0	V

Table 4 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 17.5 \text{ A}$	$T_{vj} = 25 \text{ °C}, V_{GS(on)} = 18 \text{ V}$	39.6		mΩ
			$T_{vj} = 25 \text{ °C}, V_{GS(on)} = 15 \text{ V}$	49.4		
			$T_{vj} = 150 \text{ °C}, V_{GS(on)} = 18 \text{ V}$	80.7	104	
			$T_{vj} = 175 \text{ °C}, V_{GS(on)} = 18 \text{ V}$	93.7		
Gate-source threshold voltage	$V_{GS(th)}$	$I_D = 5.5 \text{ mA}, V_{DS} = V_{GS}$ (tested after 1 ms pulse at $V_{GS} = 20 \text{ V}$)	$T_{vj} = 25 \text{ °C}$	3.5	4.2	V
			$T_{vj} = 175 \text{ °C}$		3.2	
Zero gate-voltage drain current	I_{DSS}	$V_{DS} = 1200 \text{ V}, V_{GS} = 0 \text{ V}$	$T_{vj} = 25 \text{ °C}$		20	μA
			$T_{vj} = 175 \text{ °C}$	2.6		
Gate leakage current	I_{GSS}	$V_{DS} = 0 \text{ V}$	$V_{GS} = -10 \text{ V}$		-120	nA
			$V_{GS} = 23 \text{ V}$		120	
Forward transconductance	g_{fs}	$I_D = 17.5 \text{ A}, V_{DS} = 20 \text{ V}$		11.5		S
Internal gate resistance	$R_{G,int}$	$f = 1 \text{ MHz}, V_{AC} = 25 \text{ mV}$		6.5		Ω
Input capacitance	C_{iss}	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}, f = 100 \text{ kHz}, V_{AC} = 25 \text{ mV}$		1310		pF
Output capacitance	C_{oss}	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}, f = 100 \text{ kHz}, V_{AC} = 25 \text{ mV}$		55		pF
Reverse transfer capacitance	C_{rss}	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}, f = 100 \text{ kHz}, V_{AC} = 25 \text{ mV}$		5		pF
C_{oss} stored energy	E_{oss}	Calculated based on $C_{oss} = f(V_{DD})$		23		μJ
Output charge	Q_{oss}	Calculated based on $C_{oss} = f(V_{DD})$		85.2		nC
Effective output capacitance, energy related	$C_{o(er)}$	$V_{DS} = 0...800 \text{ V}, V_{GS} = 0 \text{ V},$ Calculated based on E_{oss}		71.9		pF
Effective output capacitance, time related	$C_{o(tr)}$	$I_D = \text{constant}, V_{DS} = 0...800 \text{ V}, V_{GS} = 0 \text{ V},$ Calculated based on Q_{oss}		106.5		pF
Total gate charge	Q_G	$V_{DD} = 800 \text{ V}, I_D = 17.5 \text{ A}, V_{GS} = 0/18 \text{ V}, \text{turn-on pulse}$		36		nC

(table continues...)

Table 4 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Plateau gate charge	$Q_{GS(pl)}$	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, turn-on pulse		8.2		nC
Gate-drain charge	Q_{GD}	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, turn-on pulse		8.8		nC
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	7.8		ns
			$T_{vj} = 175 \text{ }^\circ\text{C}$	5.9		
Rise time	t_r	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	5		ns
			$T_{vj} = 175 \text{ }^\circ\text{C}$	4.4		
Turn-off delay time	$t_{d(off)}$	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	15.7		ns
			$T_{vj} = 175 \text{ }^\circ\text{C}$	18.3		
Fall time	t_f	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	6.6		ns
			$T_{vj} = 175 \text{ }^\circ\text{C}$	7.8		
Turn-on energy	E_{on}	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	153		μJ
			$T_{vj} = 175 \text{ }^\circ\text{C}$	145		
Turn-off energy	E_{off}	$V_{DD} = 800 \text{ V}$, $I_D = 17.5 \text{ A}$, $V_{GS} = 0/18 \text{ V}$, $R_{G,ext} = 2.3 \Omega$, $L_\sigma = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{vj} = 25 \text{ }^\circ\text{C}$	33		μJ
			$T_{vj} = 175 \text{ }^\circ\text{C}$	42		

(table continues...)

Table 4 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Total switching energy	E_{tot}	$V_{\text{DD}} = 800 \text{ V}$, $I_{\text{D}} = 17.5 \text{ A}$, $V_{\text{GS}} = 0/18 \text{ V}$, $R_{\text{G,ext}} = 2.3 \Omega$, $L_{\sigma} = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{\text{vj}} = 25 \text{ }^{\circ}\text{C}$	186		μJ
			$T_{\text{vj}} = 175 \text{ }^{\circ}\text{C}$	187		
Turn-on energy at -5 V	E_{on}	$V_{\text{DD}} = 800 \text{ V}$, $I_{\text{D}} = 17.5 \text{ A}$, $V_{\text{GS}} = -5/18 \text{ V}$, $R_{\text{G,ext}} = 2.3 \Omega$, $L_{\sigma} = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{\text{vj}} = 25 \text{ }^{\circ}\text{C}$	153		μJ
			$T_{\text{vj}} = 175 \text{ }^{\circ}\text{C}$	145		
Turn-off energy at -5 V	E_{off}	$V_{\text{DD}} = 800 \text{ V}$, $I_{\text{D}} = 17.5 \text{ A}$, $V_{\text{GS}} = -5/18 \text{ V}$, $R_{\text{G,ext}} = 2.3 \Omega$, $L_{\sigma} = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{\text{vj}} = 25 \text{ }^{\circ}\text{C}$	23		μJ
			$T_{\text{vj}} = 175 \text{ }^{\circ}\text{C}$	23		
Total switching energy at -5 V	E_{tot}	$V_{\text{DD}} = 800 \text{ V}$, $I_{\text{D}} = 17.5 \text{ A}$, $V_{\text{GS}} = -5/18 \text{ V}$, $R_{\text{G,ext}} = 2.3 \Omega$, $L_{\sigma} = 9 \text{ nH}$, diode: package integrated SiC Schottky diode	$T_{\text{vj}} = 25 \text{ }^{\circ}\text{C}$	328		μJ
			$T_{\text{vj}} = 175 \text{ }^{\circ}\text{C}$	331		
Virtual junction temperature	T_{vj}		-55		175	$^{\circ}\text{C}$

Note: The chip technology was characterized up to 200 kV/ μs . The measured dV/dt was limited by measurement test setup and package.

3 Body diode (MOSFET)

Table 5 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Drain-source voltage	V_{DSS}	$T_{\text{vj}} \geq 25 \text{ }^{\circ}\text{C}$		1200	V
Continuous reverse drain current for $R_{\text{th(j-c,max)}}$, limited by $T_{\text{vj(max)}}$	I_{SDC}	$V_{\text{GS}} = 0 \text{ V}$	$T_{\text{c}} = 25 \text{ }^{\circ}\text{C}$	48	A
			$T_{\text{c}} = 100 \text{ }^{\circ}\text{C}$	27.6	
Peak reverse drain current, t_{p} limited by $T_{\text{vj(max)}}$	I_{SM}	$V_{\text{GS}} = 0 \text{ V}$		117	A

Table 6 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Drain-source reverse voltage	V_{SD}	$I_{SD} = 17.5 \text{ A}, V_{GS} = 0 \text{ V}$	$T_{vj} = 25 \text{ °C}$	4.2	5.5	V
			$T_{vj} = 100 \text{ °C}$	4.1		
			$T_{vj} = 175 \text{ °C}$	4		
Virtual junction temperature	T_{vj}		-55		175	°C

4 SiC Diode

Table 7 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}	$T_{vj} \geq 25 \text{ °C}$		1200	V
Continuous forward current for $R_{th(j-c,max)}$	I_F		$T_c = 25 \text{ °C}$	104	A
			$T_c = 135 \text{ °C}$	49	
			$T_c = 167 \text{ °C}$	30	
Surge repetitive forward current, sine halfwave	$I_{F,RM}$	$t_p = 10 \text{ ms}$	$T_c = 25 \text{ °C}$	120	A
			$T_c = 100 \text{ °C}$	90	
Surge non-repetitive forward current, sine halfwave	$I_{F,SM}$	$t_p = 10 \text{ ms}$	$T_c = 25 \text{ °C}$	147	A
			$T_c = 150 \text{ °C}$	120	
Non-repetitive peak forward current	$I_{F,max}$	$t_p = 10 \text{ } \mu\text{s}$		750	A
I^2t -value	$\int I^2 t$	$t_p = 10 \text{ ms}$	$T_c = 25 \text{ °C}$	108	A^2s
			$T_c = 150 \text{ °C}$	72	
Diode dv/dt ruggedness	dv/dt	$V_R = 0 \dots 960 \text{ V}$		150	V/ns
Avalanche energy, single pulse	E_{AS}	$I_D = 30 \text{ A}, L = 0.28 \text{ mH}$		126	mJ
Power dissipation for $R_{th(j-c,max)}$	P_{tot}		$T_c = 25 \text{ °C}$	500	W
			$T_c = 100 \text{ °C}$	250	

Table 8 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R = 500 \text{ } \mu\text{A}$	1200			V

(table continues...)

Table 8 (continued) Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Diode forward voltage	V_F	$I_F = 30 \text{ A}$	$T_{vj} = 25 \text{ °C}$		1.45	1.8	V
			$T_{vj} = 125 \text{ °C}$		1.69		
			$T_{vj} = 150 \text{ °C}$		1.8		
Reverse current	I_R	$V_R = 1200 \text{ V}$	$T_{vj} = 25 \text{ °C}$		15	240	μA
			$T_{vj} = 150 \text{ °C}$		80		
Total capacitive charge	Q_C	$V_R = 800 \text{ V}$, $T_{vj} = 25 \text{ °C}$ & 150 °C , $Q_C = \int_0^{V_R} C(V) dV$			140		nC
Total capacitance	C	$f = 100 \text{ kHz}$	$V_R = 1 \text{ V}$		1790		pF
			$V_R = 400 \text{ V}$		125		
			$V_R = 800 \text{ V}$		100		
Virtual junction temperature	T_{vj}			-55		175	°C

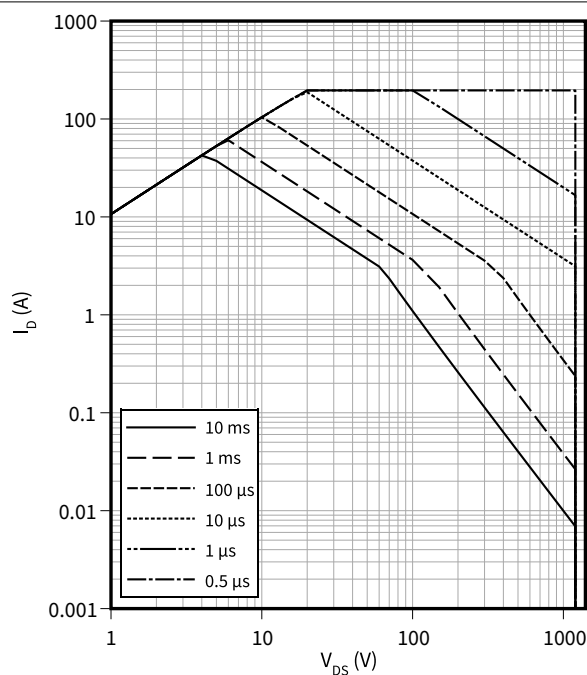
Note: Characteristics at $T_{vj} = 25 \text{ °C}$, unless otherwise specified.

5 Characteristics diagrams

Safe operating area (SOA)

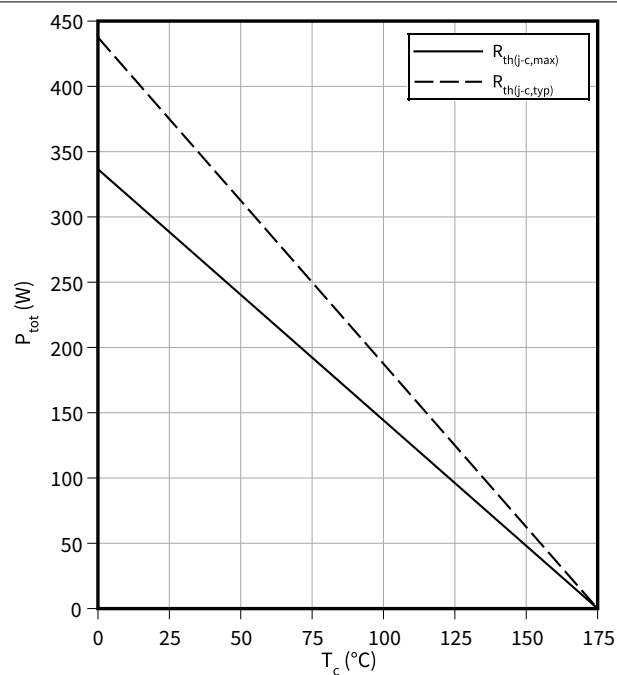
$$I_D = f(V_{DS})$$

$$T_{vj} \leq 175^\circ\text{C}, T_c = 25^\circ\text{C}$$



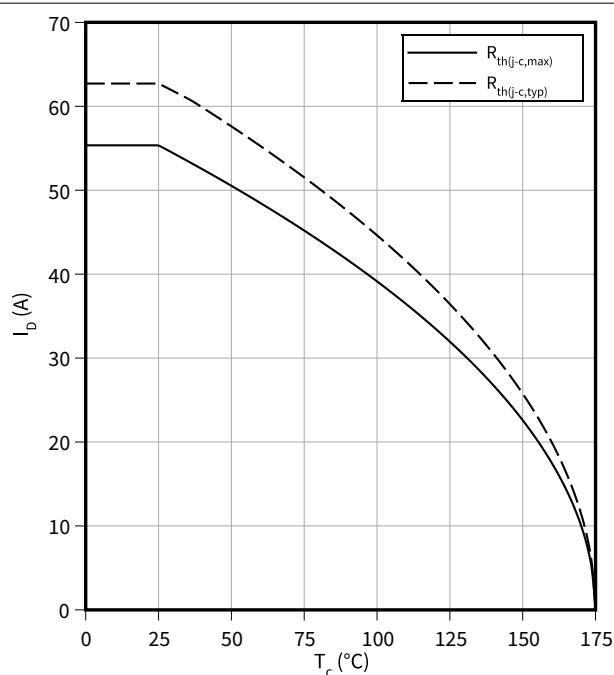
Power dissipation of MOSFET/body diode as a function of case temperature

$$P_{tot} = f(T_c)$$



Maximum DC drain to source current as a function of case temperature limited by bond wire

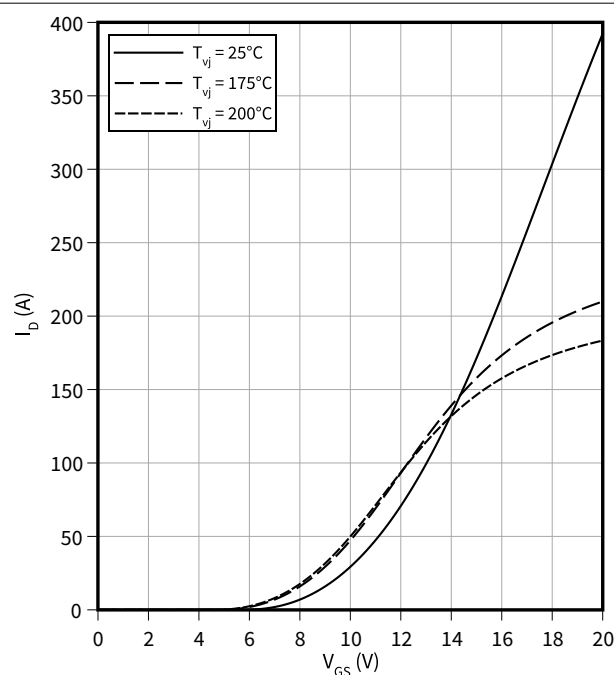
$$I_D = f(T_c)$$



Typical transfer characteristic

$$I_D = f(V_{GS})$$

$$V_{DS} = 20\text{ V}, t_p = 20\text{ μs}$$

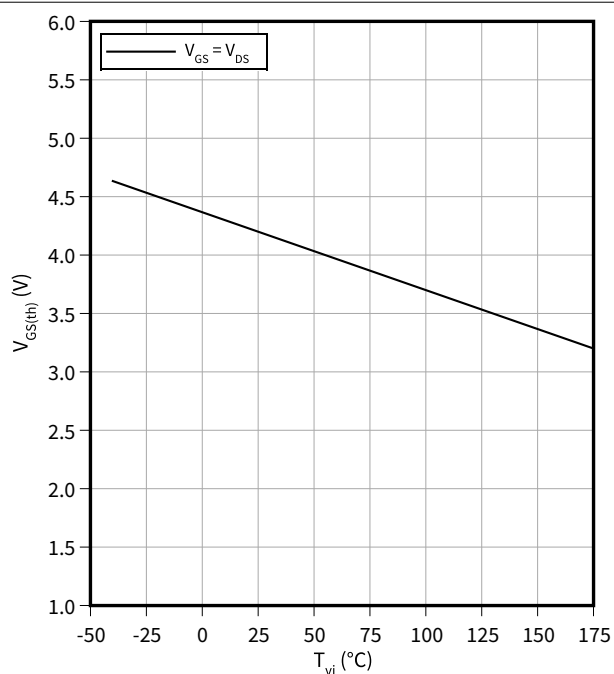


5 Characteristics diagrams

Typical gate-source threshold voltage as a function of junction temperature

$$V_{GS(th)} = f(T_{vj})$$

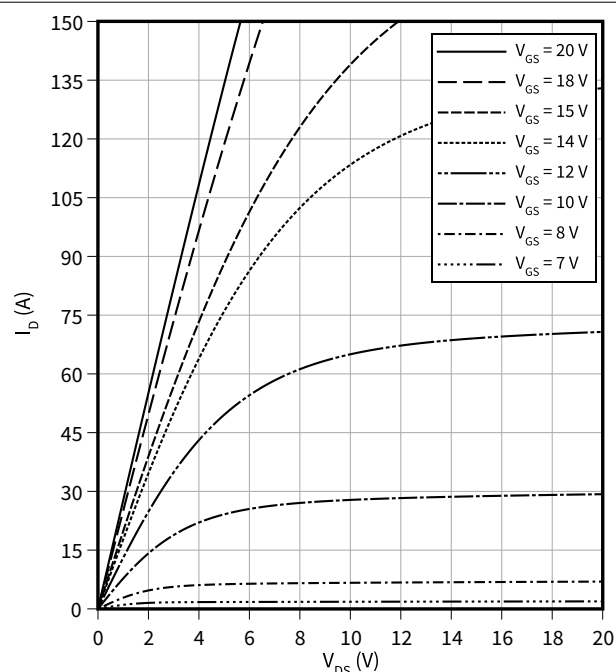
$$I_D = 5.5 \text{ mA}$$



Typical output characteristic, V_{GS} as a parameter

$$I_D = f(V_{DS})$$

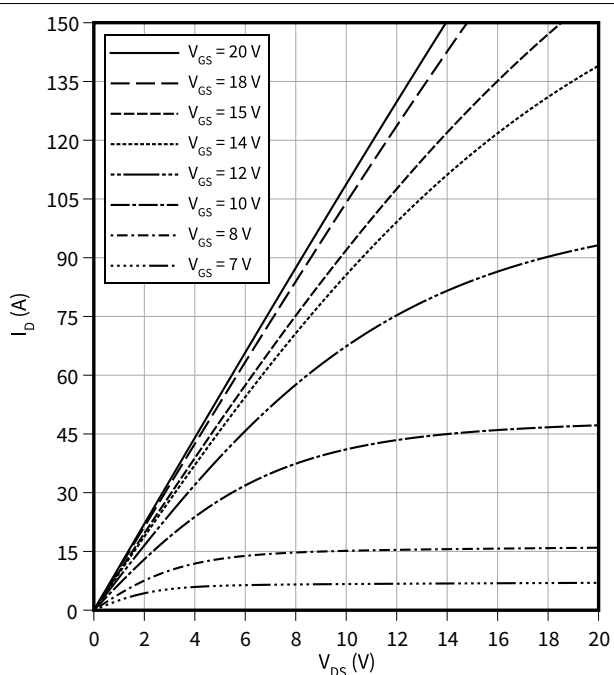
$$T_{vj} = 25 \text{ °C}, t_p = 20 \text{ } \mu\text{s}$$



Typical output characteristic, V_{GS} as a parameter

$$I_D = f(V_{DS})$$

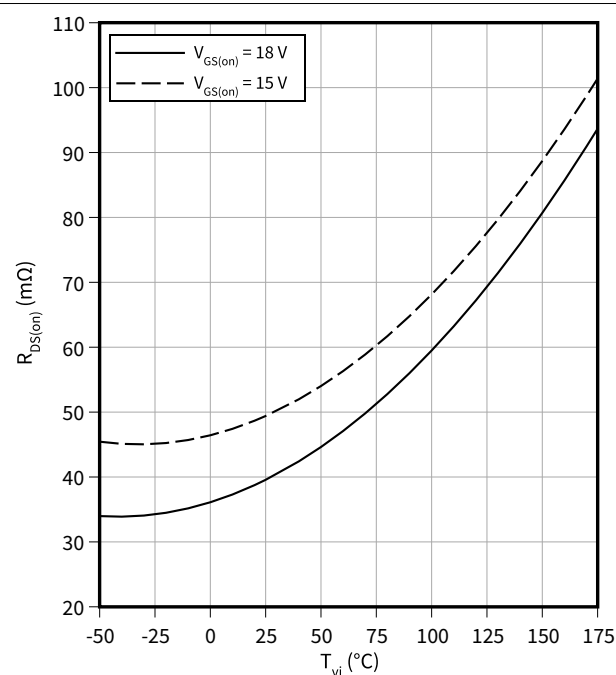
$$T_{vj} = 175 \text{ °C}, t_p = 20 \text{ } \mu\text{s}$$



Typical on-state resistance as a function of junction temperature

$$R_{DS(on)} = f(T_{vj})$$

$$I_D = 17.5 \text{ A}$$

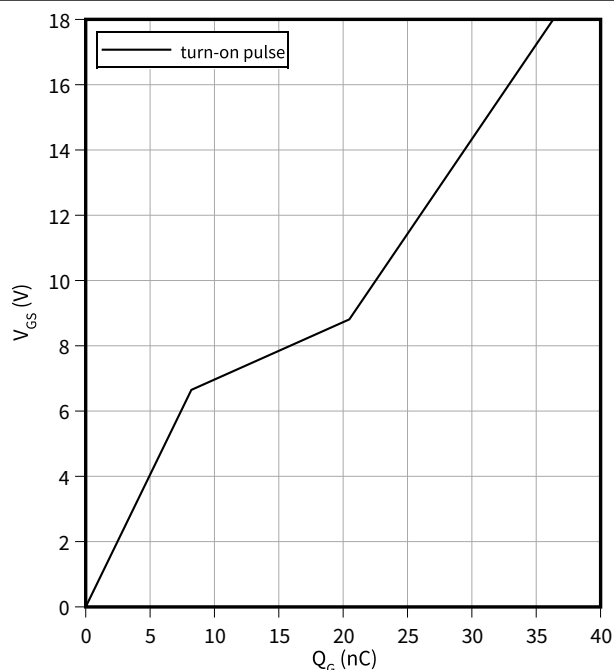


5 Characteristics diagrams

Typical gate charge

$$V_{GS} = f(Q_G)$$

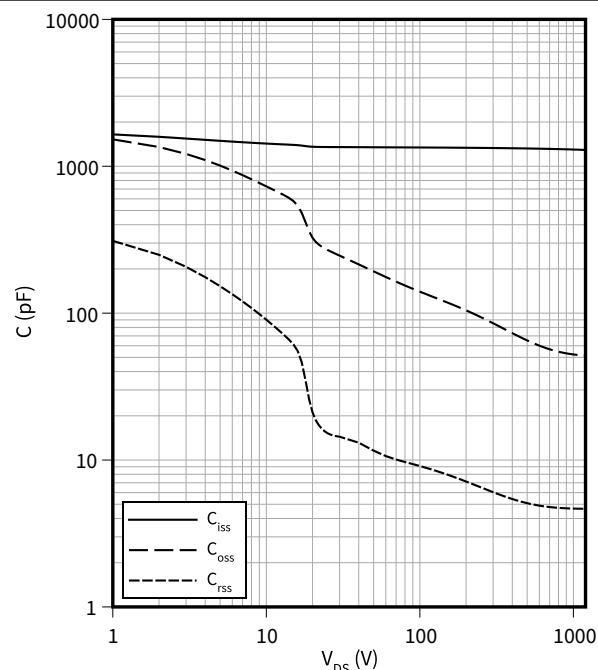
$$I_D = 17.5 \text{ A}, V_{DS} = 800 \text{ V}$$



Typical capacitance as a function of drain-source voltage

$$C = f(V_{DS})$$

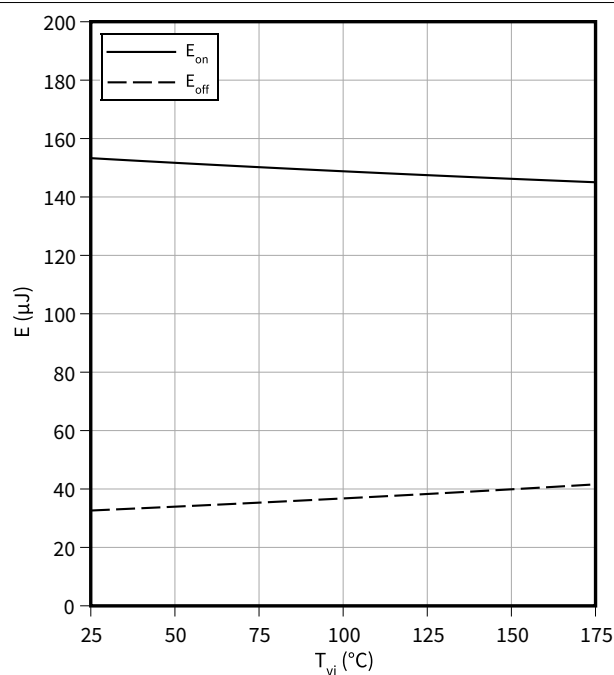
$$f = 100 \text{ kHz}, V_{GS} = 0 \text{ V}$$



Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = 0 \text{ V}$

$$E = f(T_{vj})$$

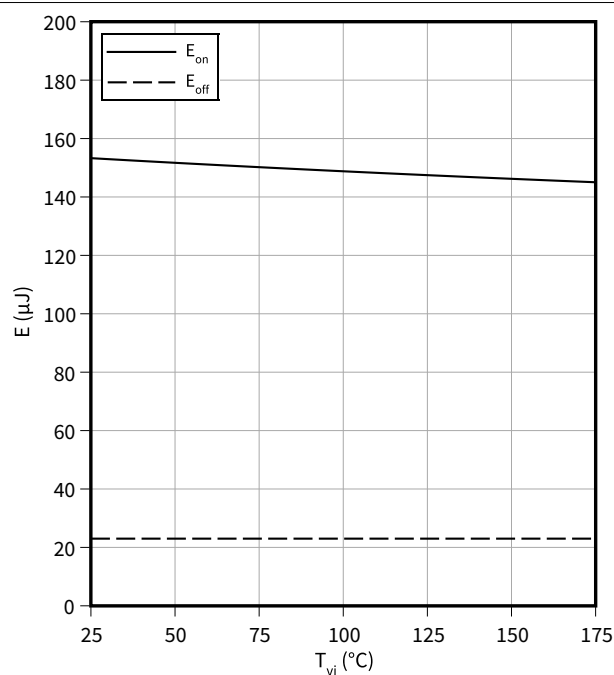
$$V_{GS} = 0/18 \text{ V}, I_D = 17.5 \text{ A}, R_{G,ext} = 2.3 \Omega, V_{DD} = 800 \text{ V}$$



Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = -5 \text{ V}$

$$E = f(T_{vj})$$

$$V_{GS} = -5/18 \text{ V}, I_D = 17.5 \text{ A}, R_{G,ext} = 2.3 \Omega, V_{DD} = 800 \text{ V}$$

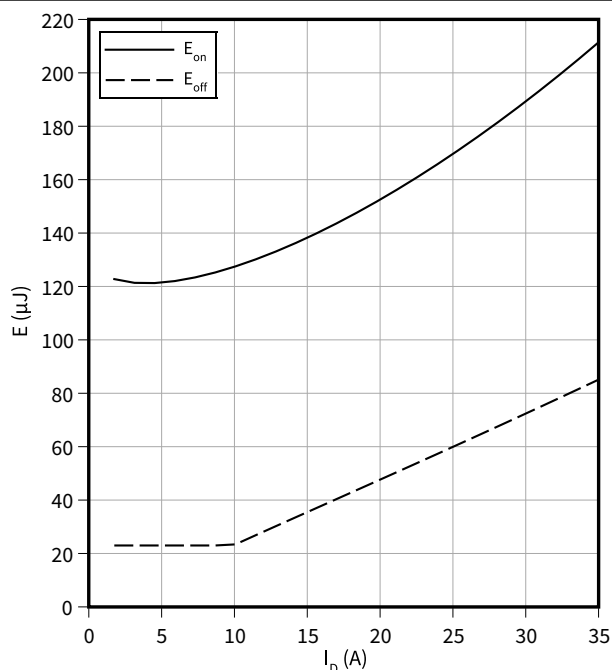


5 Characteristics diagrams

Typical switching energy as a function of drain current, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = 0$ V

$$E = f(I_D)$$

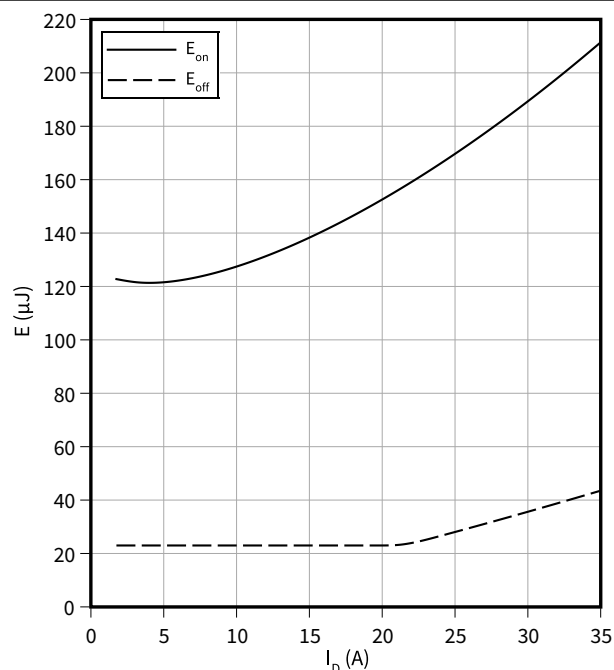
$V_{GS} = 0/18$ V, $T_{vj} = 175$ °C, $R_{G,ext} = 2.3$ Ω , $V_{DD} = 800$ V



Typical switching energy as a function of drain current, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = -5$ V

$$E = f(I_D)$$

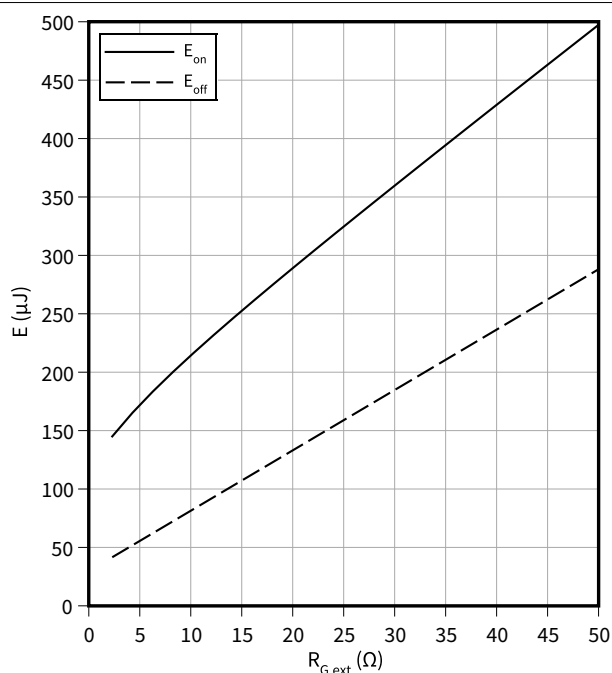
$V_{GS} = -5/18$ V, $T_{vj} = 175$ °C, $R_{G,ext} = 2.3$ Ω , $V_{DD} = 800$ V



Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = 0$ V

$$E = f(R_{G,ext})$$

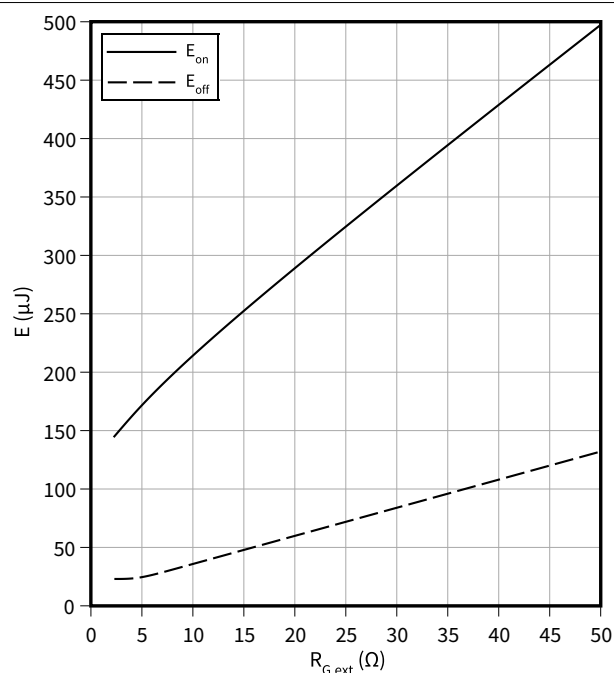
$V_{GS} = 0/18$ V, $I_D = 17.5$ A, $T_{vj} = 175$ °C, $V_{DD} = 800$ V



Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = -5$ V

$$E = f(R_{G,ext})$$

$V_{GS} = -5/18$ V, $I_D = 17.5$ A, $T_{vj} = 175$ °C, $V_{DD} = 800$ V

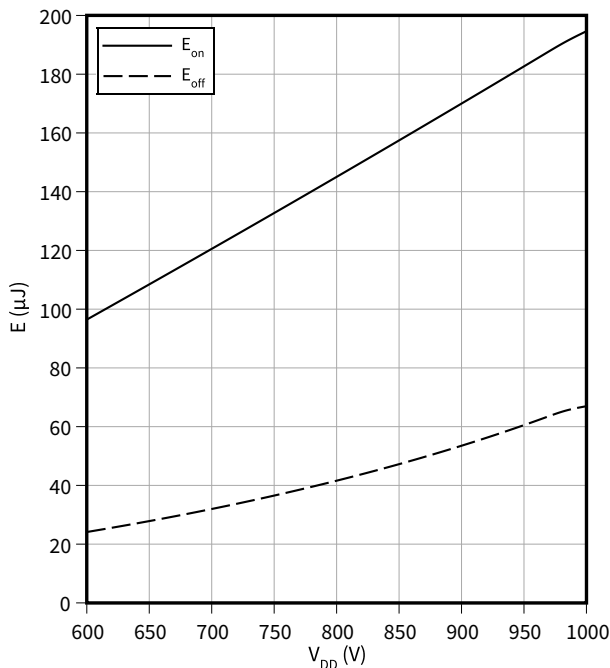


5 Characteristics diagrams

Typical switching energy as a function of DC link voltage, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = 0\text{ V}$

$E = f(V_{DD})$

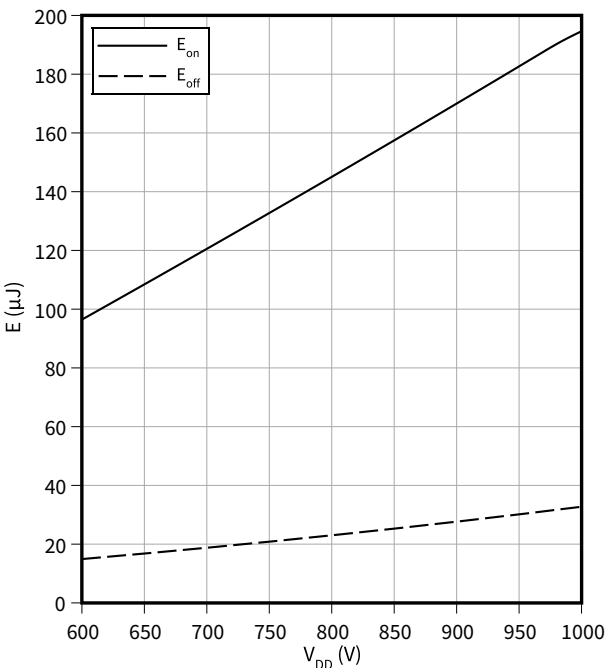
$V_{GS} = 0/18\text{ V}$, $I_D = 17.5\text{ A}$, $T_{vj} = 175\text{ °C}$, $R_{G,ext} = 2.3\text{ }\Omega$



Typical switching energy as a function of DC link voltage, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = -5\text{ V}$

$E = f(V_{DD})$

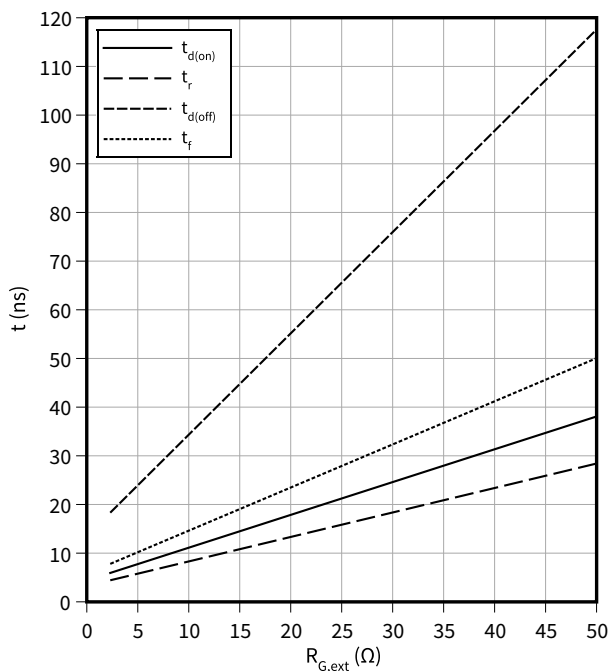
$V_{GS} = -5/18\text{ V}$, $I_D = 17.5\text{ A}$, $T_{vj} = 175\text{ °C}$, $R_{G,ext} = 2.3\text{ }\Omega$



Typical switching times as a function of gate resistance, test circuit in Fig. F, 2nd device package integrated Schottky diode: $V_{GS} = 0\text{ V}$

$t = f(R_{G,ext})$

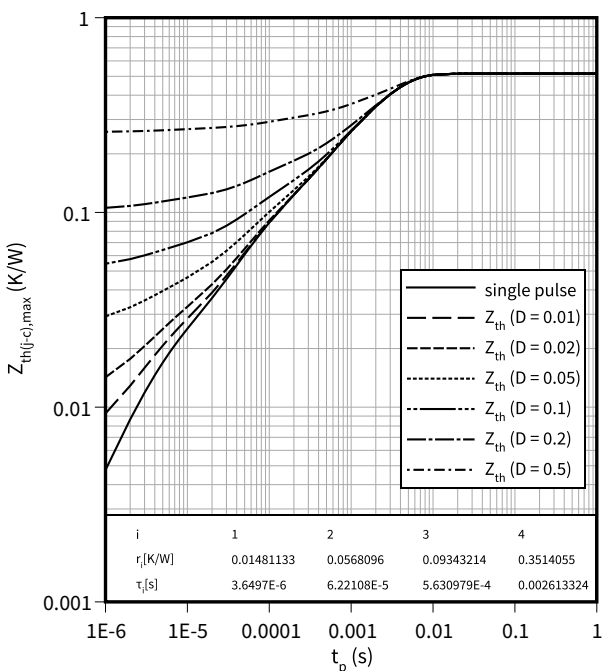
$V_{GS} = 0/18\text{ V}$, $I_D = 17.5\text{ A}$, $T_{vj} = 175\text{ °C}$, $V_{DD} = 800\text{ V}$



Max. transient thermal impedance (MOSFET/diode)

$Z_{th(j-c),max} = f(t_p)$

$D = t_p/T$

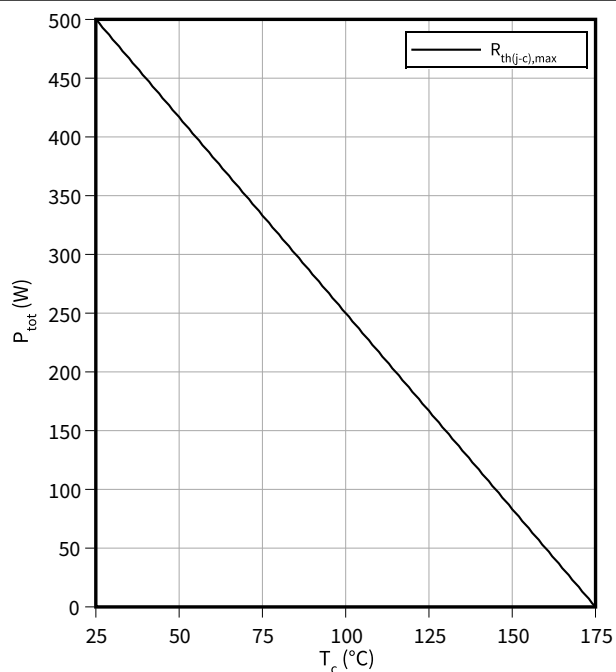


5 Characteristics diagrams

SiC Schottky diode: Power dissipation as function of case temperature

$$P_{\text{tot}} = f(T_c)$$

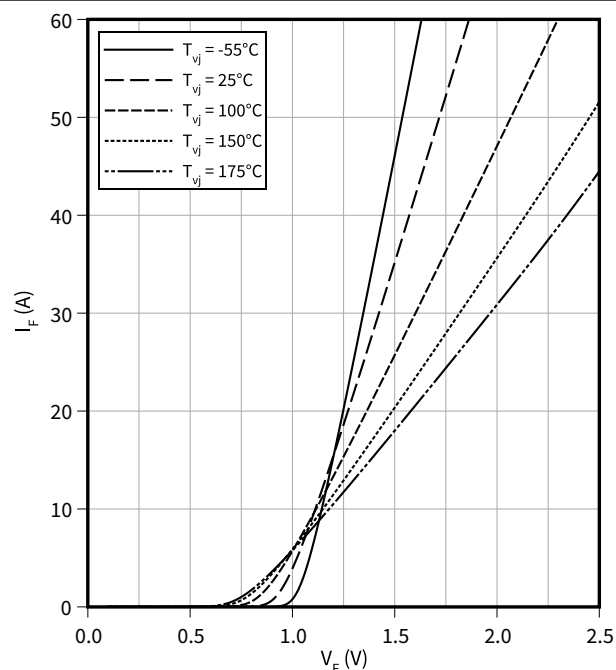
$$T_{vj} \leq 175^\circ\text{C}$$



SiC Schottky diode: Typical forward characteristics

$$I_F = f(V_F)$$

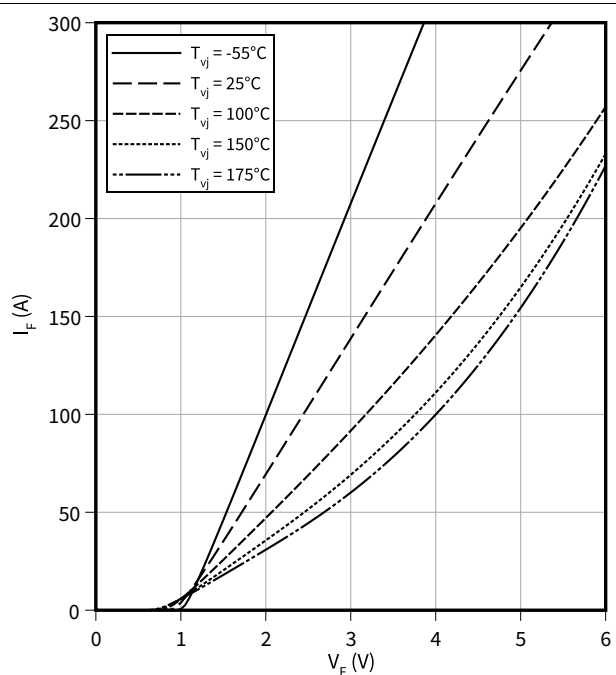
$$t_p = 10 \mu\text{s}$$



SiC Schottky diode: Typical forward characteristics in surge current

$$I_F = f(V_F)$$

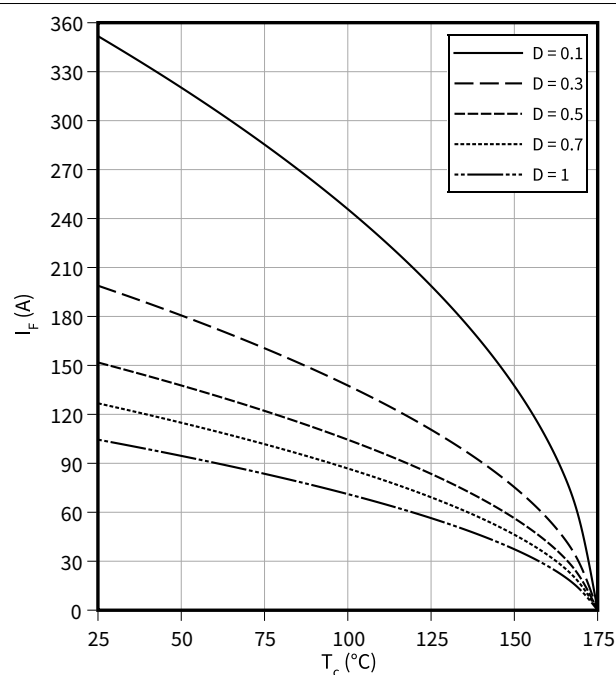
$$t_p = 10 \mu\text{s}$$



SiC Schottky diode: Forward current as function of temperature

$$I_F = f(T_c)$$

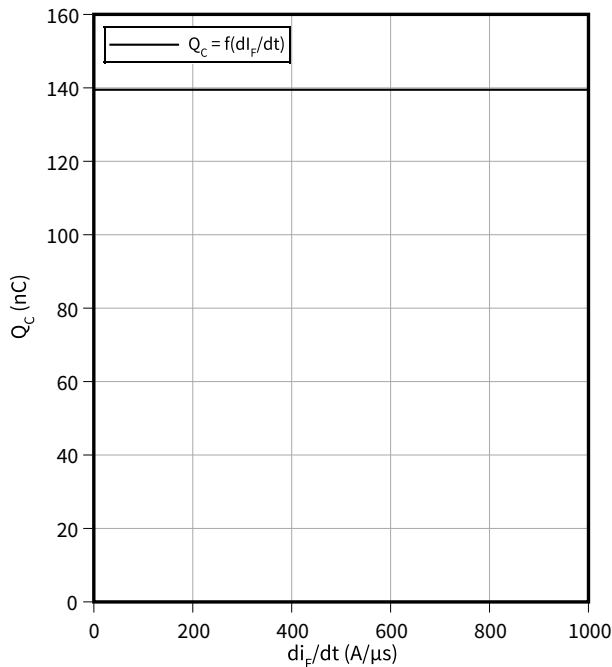
$$T_{vj} \leq 175^\circ\text{C}$$



5 Characteristics diagrams

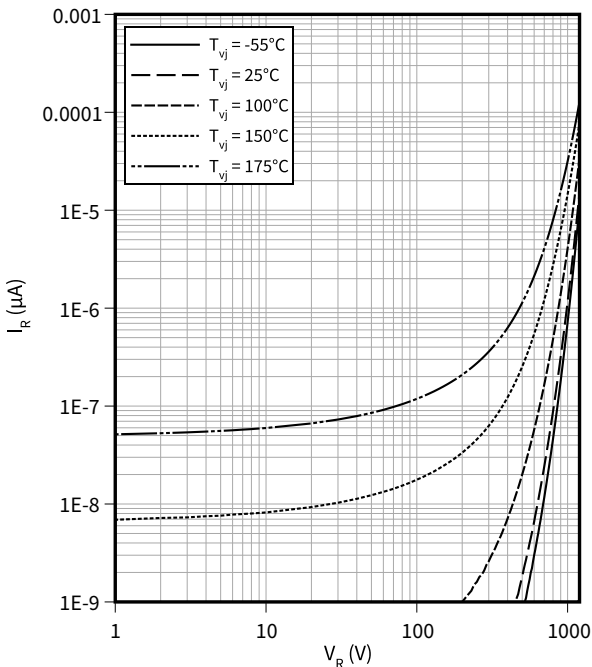
SiC Schottky diode: Typical capacitive charge as function of current slope

$Q_C = f(dI_F/dt)$
 $T_{vj} = 25\text{ }^{\circ}\text{C}, V_R = 800\text{ V}$



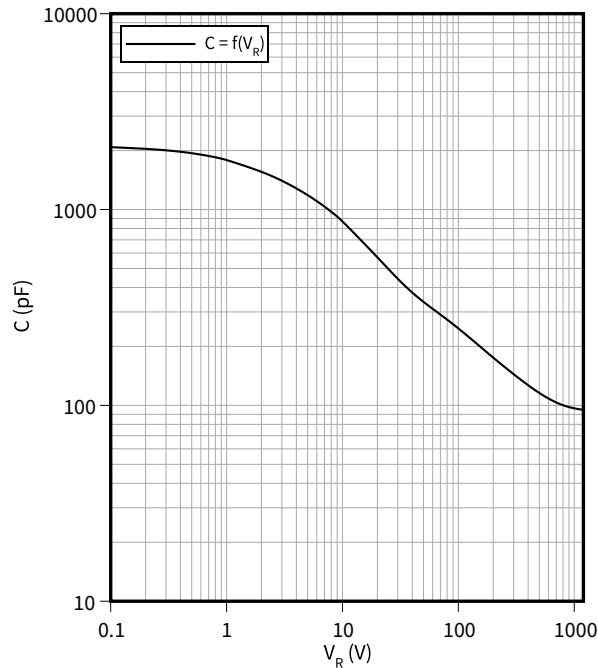
SiC Schottky diode: Typical reverse characteristics

$I_R = f(V_R)$



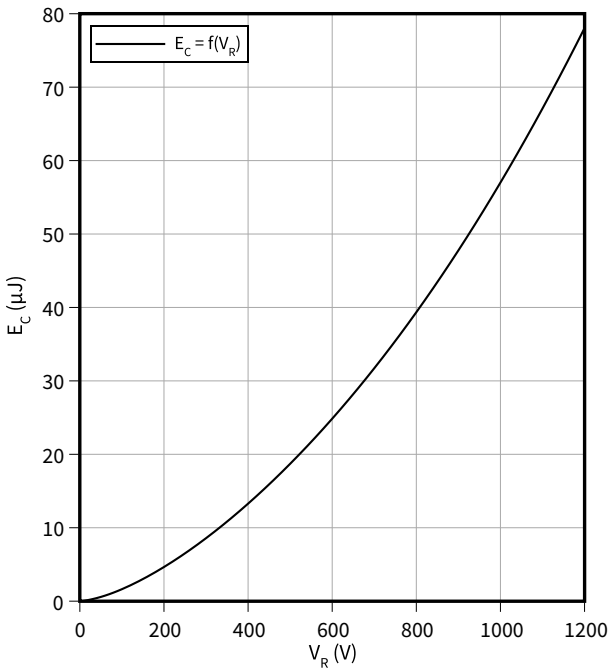
SiC Schottky diode: Typical capacitance as function of reverse voltage

$C = f(V_R)$
 $T_{vj} = 25\text{ }^{\circ}\text{C}, f = 100\text{ kHz}$



SiC Schottky diode: Typical capacitively stored energy as function of reverse voltage

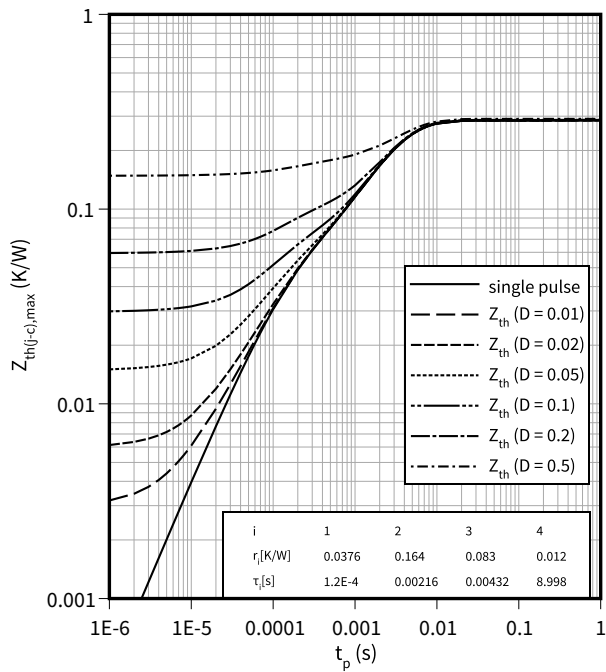
$E_C = f(V_R)$
 $f = 100\text{ kHz}$



5 Characteristics diagrams

SiC Schottky diode: Max. transient thermal impedance

$Z_{th(j-c),max} = f(t_p)$
 $D = t_p/T$



6 Package outlines

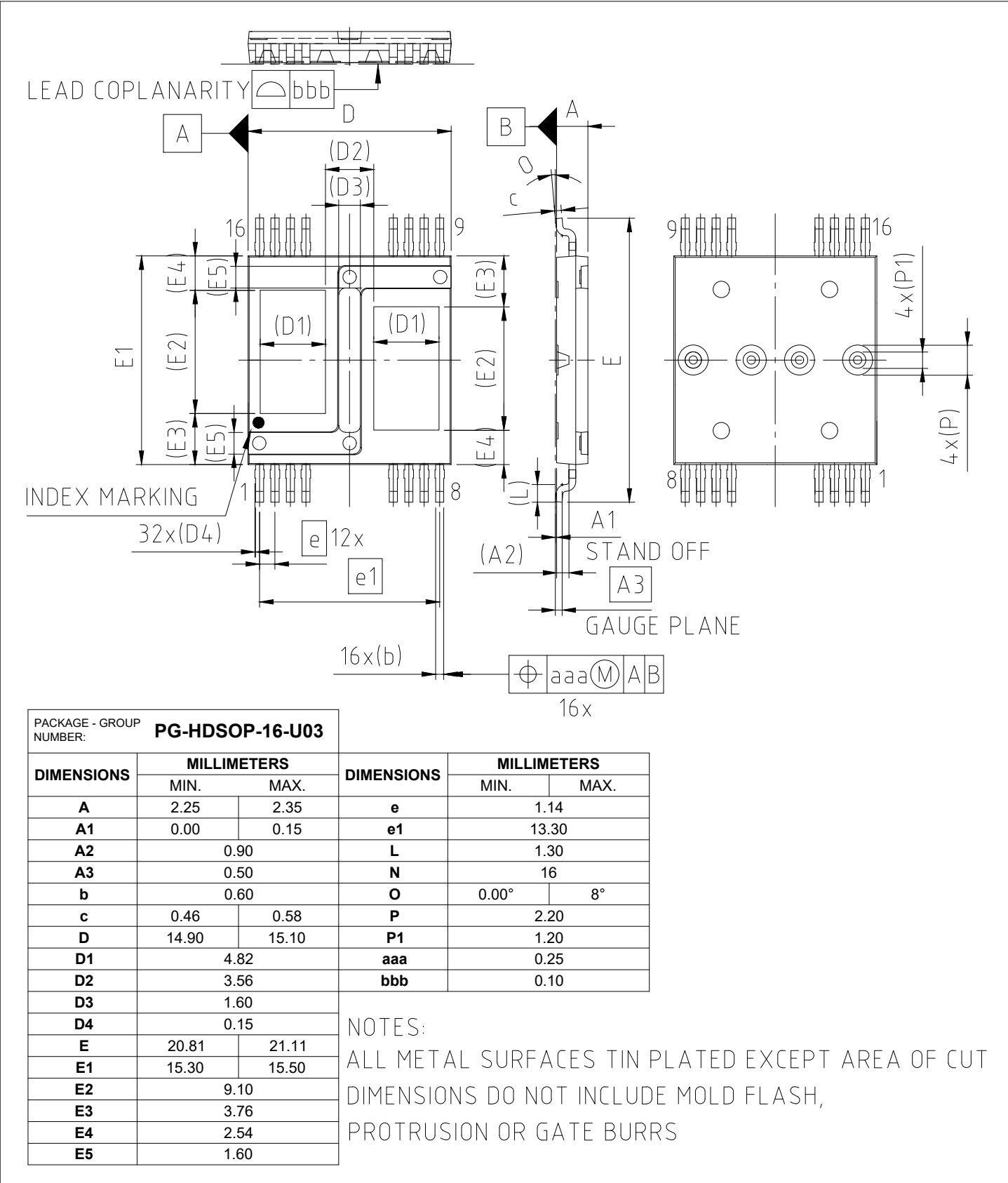


Figure 1

7 Testing conditions

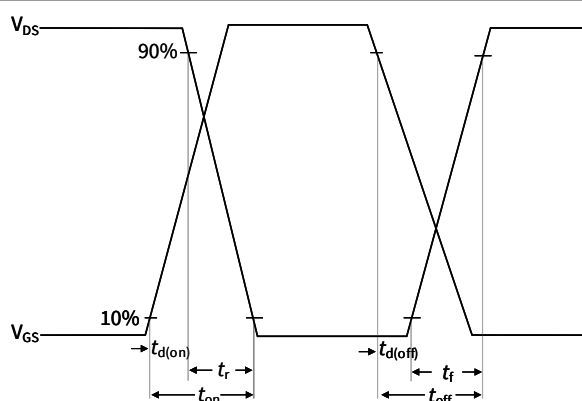


Figure A. Definition of switching times

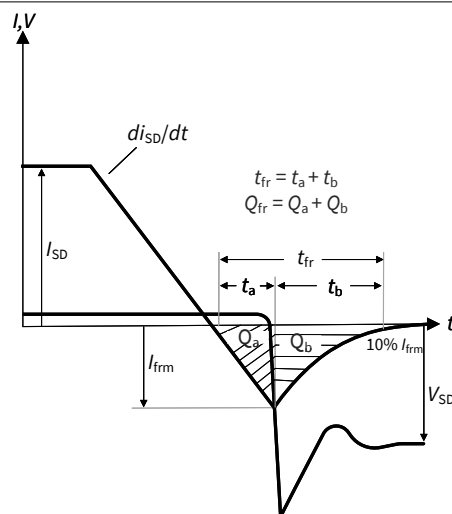


Figure B. Definition of body diode switching characteristics

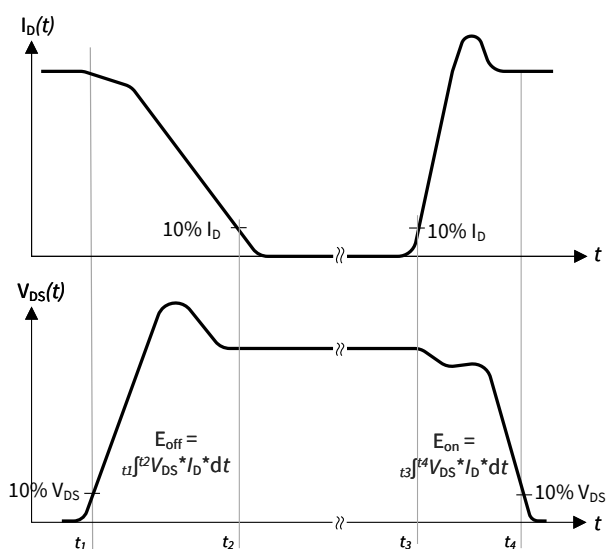


Figure C. Definition of switching losses

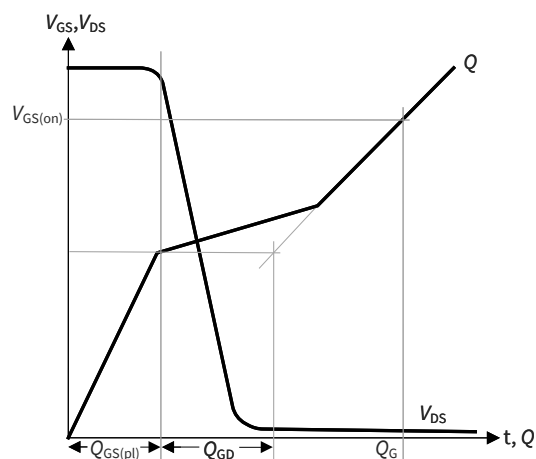


Figure D. Definition of QGD

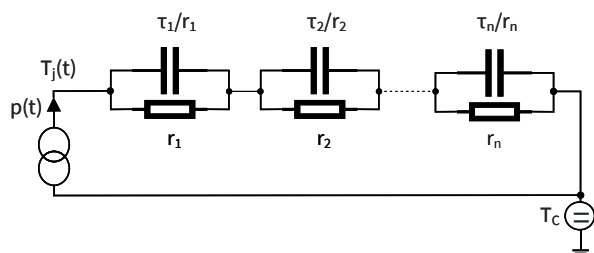


Figure E. Thermal equivalent circuit

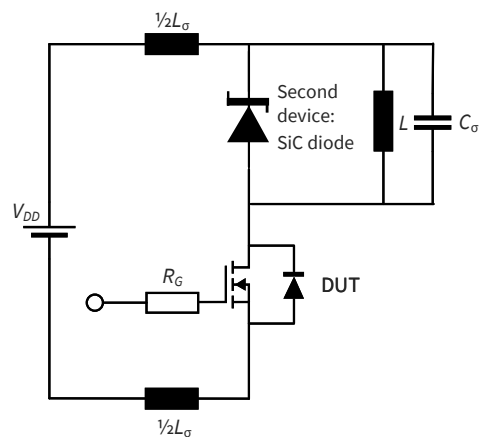


Figure F. Dynamic test circuit for MOSFET
Parasitic inductance L_{σ} ,
Parasitic capacitor C_{σ} ,

Figure 2

Revision history

Document revision	Date of release	Description of changes
0.10	2024-01-24	Target datasheet
0.20	2024-11-20	Updated Avalanche energy, single pulse E_{AS} in Table 5 Editorial changes
1.00	2026-06-25	Final datasheet

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