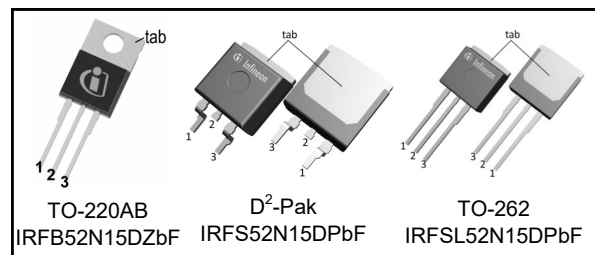
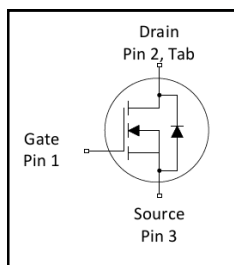


$V_{(BR)DSS}$	150V
$V_{DS(Avalanche) \text{ min.}}$	200V
$R_{DS(on) \text{ max @ 10V}}$	32m Ω
$T_J \text{ max}$	175°C



Applications

- High frequency DC-DC converters
- Plasma Display Panel

Benefits

- Low Gate-to-Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{OSS} to Simplify Design, (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current
- Lead-Free

G	D	S
Gate	Drain	Source

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRFB52N15DPbF	TO-220	Tube	50	IRFB52N15DPbF
IRFS52N15DPbF	D²-Pak	Tape and Reel	800	IRFS52N15DPbF
IRFSL52N15DPbF	TO-262	Tube	50	IRFSL52N15DPbF

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$ ⑦	51*	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$ ⑦	36*	
I_{DM}	Pulsed Drain Current ①	240	
$P_D @ T_A = 25^\circ\text{C}$	Maximum Power Dissipation ⑦	3.8	W
$P_D @ T_C = 25^\circ\text{C}$	Maximum Power Dissipation ⑦	230*	W
	Linear Derating Factor	1.5*	W/°C
V_{GS}	Gate-to-Source Voltage	± 30	V
dv/dt	Peak Diode Recovery ③	5.5	V/ns
T_J	Operating Junction and	-55 to + 175	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds (1.6mm from case)		
	Mounting torque, 6-32 or M3 screw	10 lbf•in (1.1N•m)	

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	0.47*	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface, TO-220®	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient, TO-220 ⑥	—	62	
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount), D² Pak ⑦	—	40	

* $R_{\theta JC}$ (end of life) for D2Pak and TO-262 = 0.65°C/W. This is the maximum measured value after 1000 temperature cycles from -55 to 150°C and is accounted for by the physical wear out of the die attach medium.

Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	150	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.16	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	32	m Ω	$V_{GS} = 10V, I_D = 26A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	3.0	—	5.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	$V_{DS} = 150V, V_{GS} = 0V$
		—	—	250		$V_{DS} = 120V, V_{GS} = 0V, T_J = 150^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 30V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -30V$

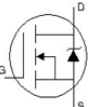
Dynamic @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

gfs	Forward Trans conductance	19	—	—	S	$V_{DS} = 50V, I_D = 36A$
Q_g	Total Gate Charge	—	60	89	nC	$I_D = 36A$
Q_{gs}	Gate-to-Source Charge	—	18	27		$V_{DS} = 75V$
Q_{gd}	Gate-to-Drain Charge	—	28	42		$V_{GS} = 10V$ ④
$t_{d(on)}$	Turn-On Delay Time	—	16	—	ns	$V_{DD} = 75V$
t_r	Rise Time	—	47	—		$I_D = 36A$
$t_{d(off)}$	Turn-Off Delay Time	—	28	—		$R_G = 2.5\Omega$
t_f	Fall Time	—	25	—		$V_{GS} = 10V$ ④
C_{iss}	Input Capacitance	—	2770	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	590	—		$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance	—	110	—		$f = 1.0MHz$
C_{oss}	Output Capacitance	—	3940	—		$V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz$
C_{oss}	Output Capacitance	—	260	—		$V_{GS} = 0V, V_{DS} = 120V, f = 1.0MHz$
$C_{oss\ eff.}$	Effective Output Capacitance	—	550	—		$V_{GS} = 0V, V_{DS} = 0V \text{ to } 120V$ ⑤

Avalanche Characteristics

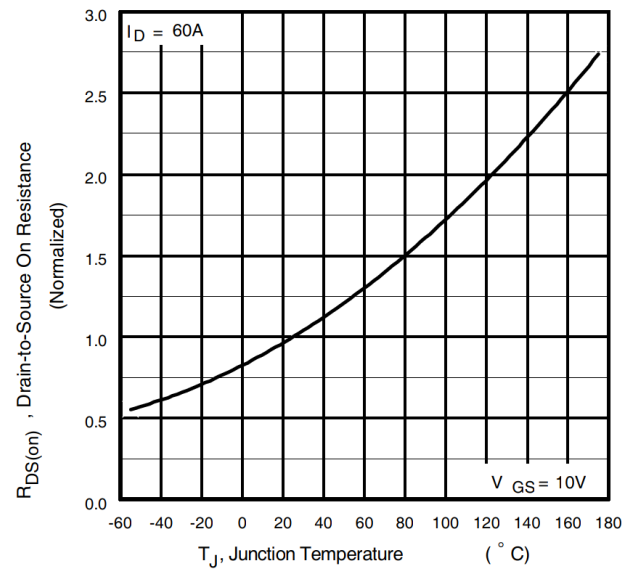
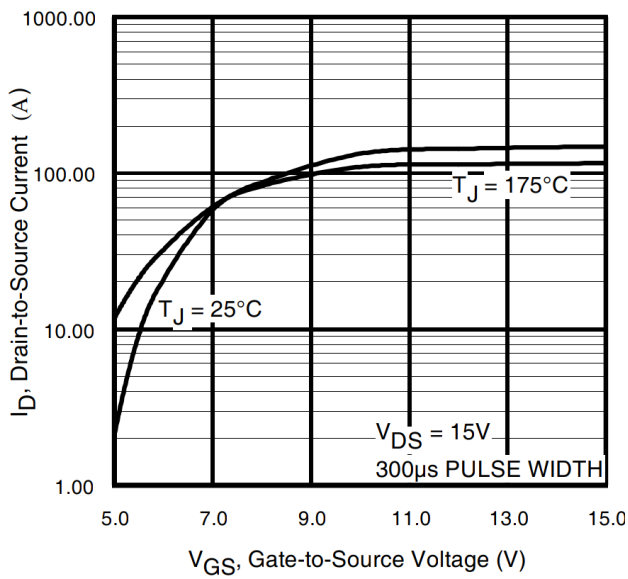
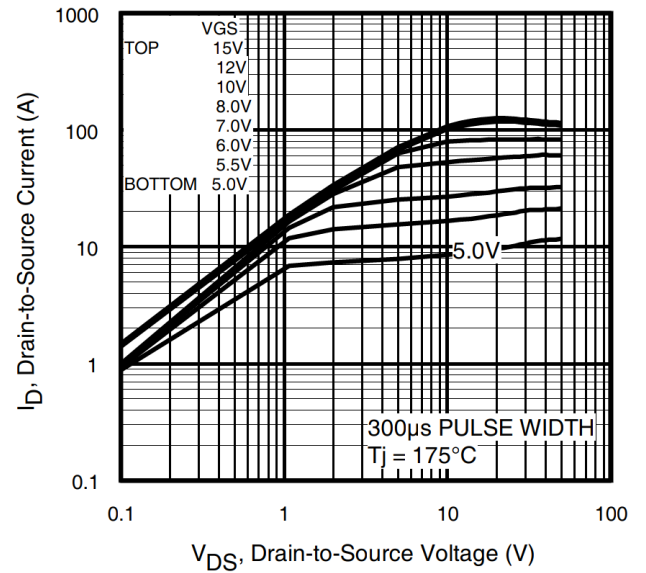
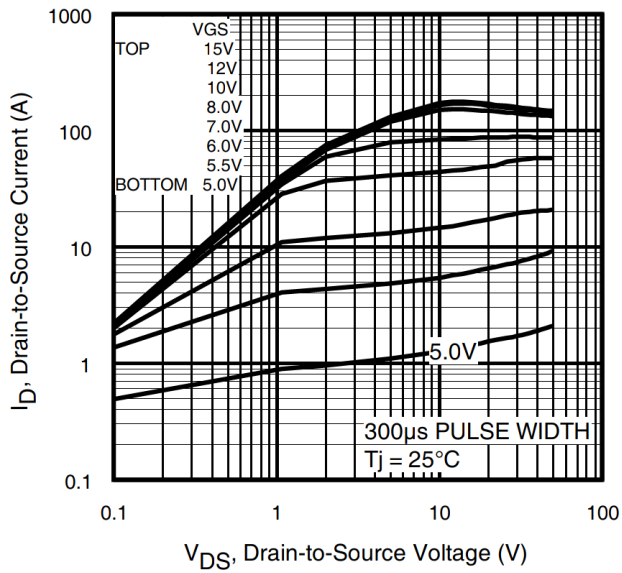
	Parameter	Min.	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②⑥	—	—	470	mJ
I_{AR}	Avalanche Current ①	—	—	36	A
E_{AR}	Repetitive Avalanche Energy ①	—	450	—	mJ
$V_{DS(Avalanche)}$	Repetitive Avalanche Voltage ①	200	—	—	V

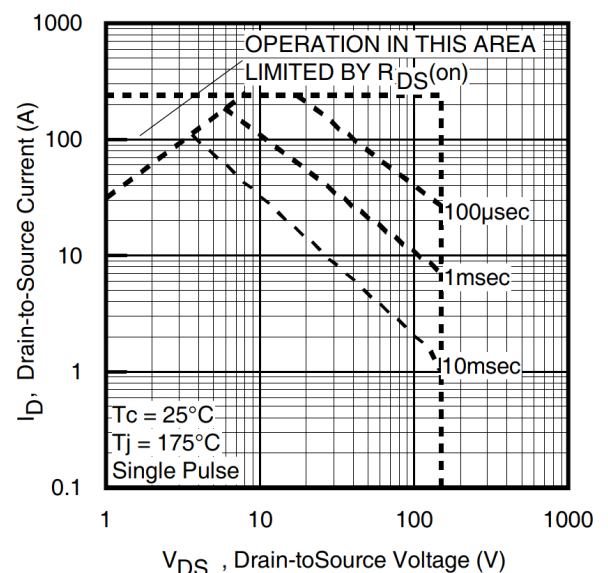
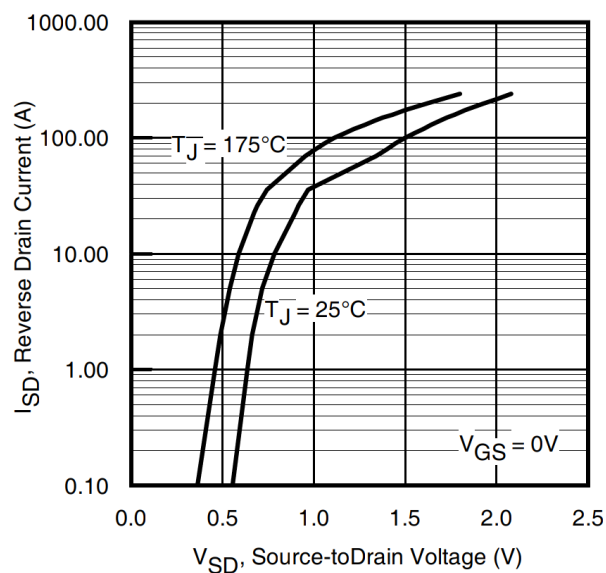
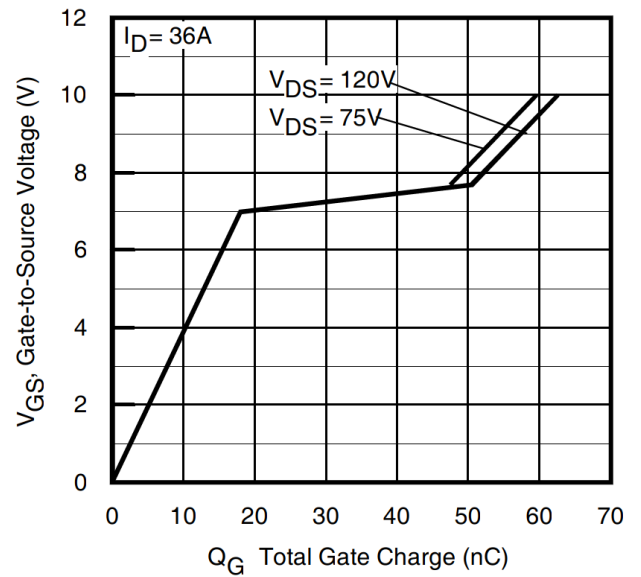
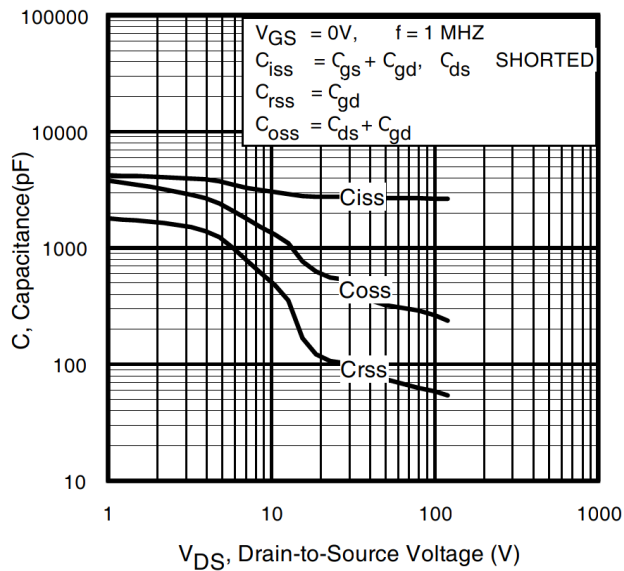
Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	60	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①⑥	—	—	240		
V_{SD}	Diode Forward Voltage	—	—	1.5	V	$T_J = 25^\circ\text{C}, I_S = 36A, V_{GS} = 0V$ ④
t_{rr}	Reverse Recovery Time	—	140	210	ns	$T_J = 25^\circ\text{C}, I_F = 36A$
Q_{rr}	Reverse Recovery Charge	—	780	1170	nC	$di/dt = 100A/\mu s$ ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_S + L_D$)				

Notes:

- ① 1% Duty cycle, 100 pulses, limited by max. junction temperature.
- ② starting $T_J = 25^\circ\text{C}$, $L = 0.72mH$, $R_G = 25\Omega$, $I_{AS} = 36A$.
- ③ $I_{SD} \leq 36A$, $di/dt \leq 400A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 175^\circ\text{C}$.
- ④ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- ⑤ $C_{oss\ eff.}$ is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 80% V_{DSS} .
- ⑥ This is only applied to TO-220AB package.
- ⑦ This is applied to D² Pak, when mounted on 1" square PCB (FR-4 or G-10 Material). For recommended footprint and soldering techniques refer to application note #AN-994.





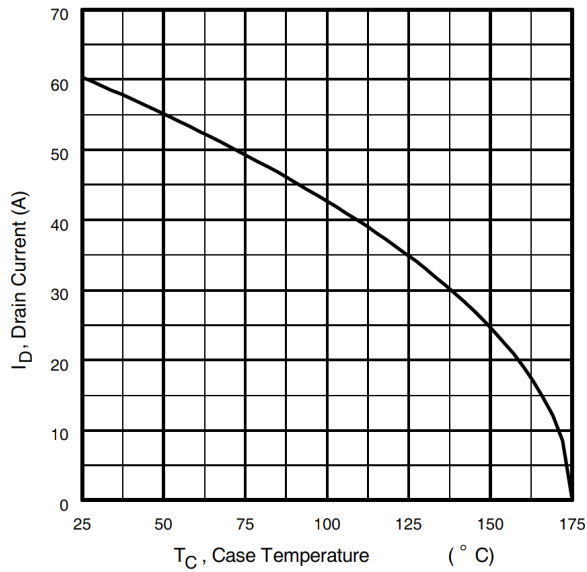


Fig 9. Maximum Drain Current vs. Case Temperature

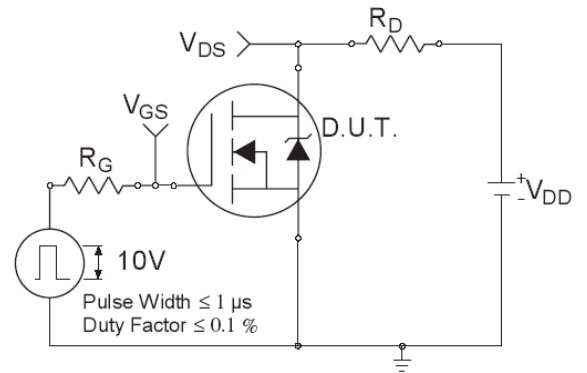


Fig 10a. Switching Time Test Circuit

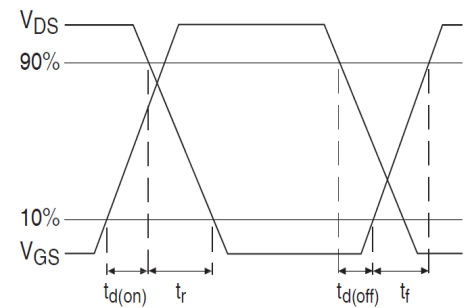


Fig 10b. Switching Time Waveforms

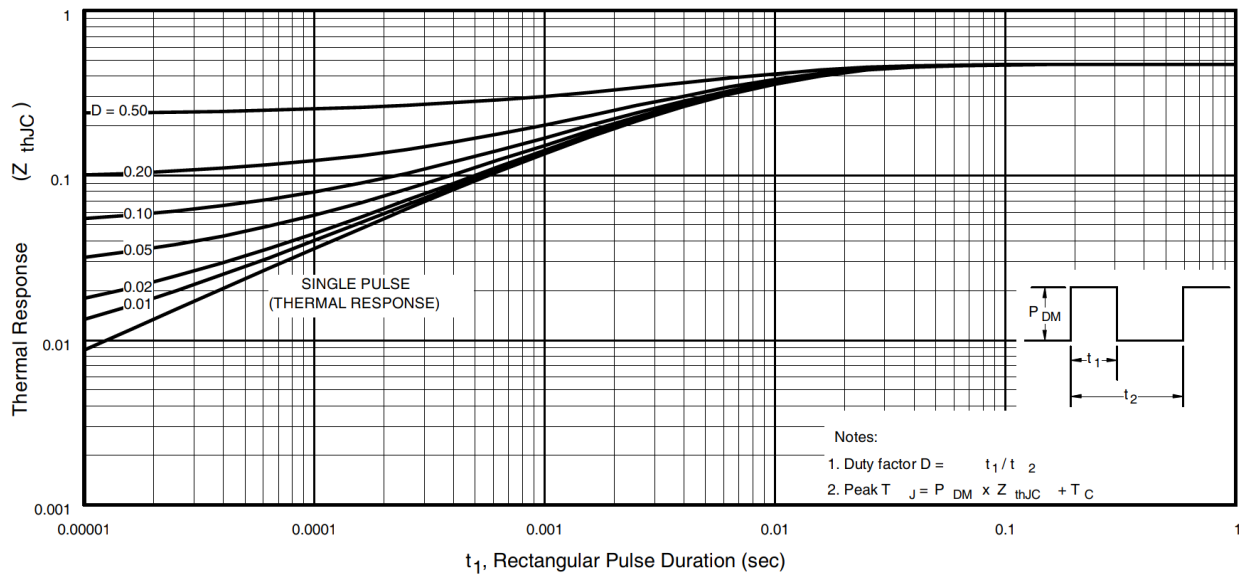


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

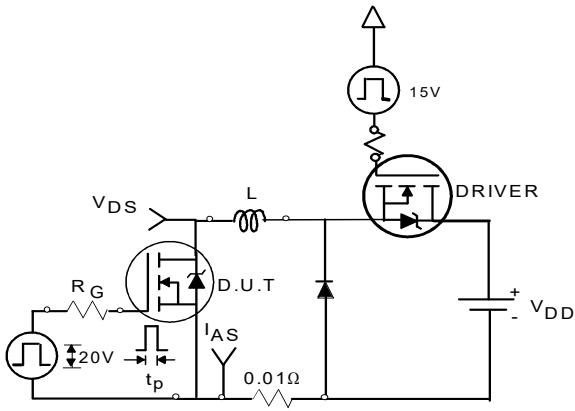


Fig 12a. Unclamped Inductive Test Circuit

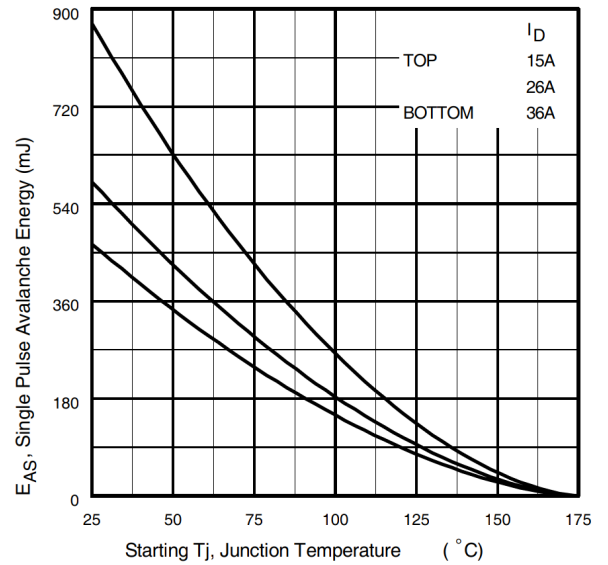


Fig 12c. Maximum Avalanche Energy vs. Drain Current

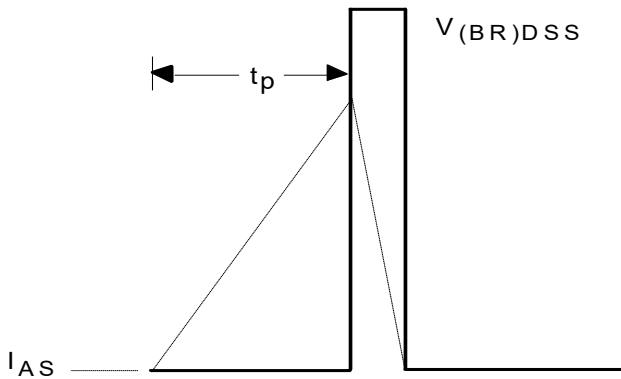


Fig 12b. Unclamped Inductive Waveforms

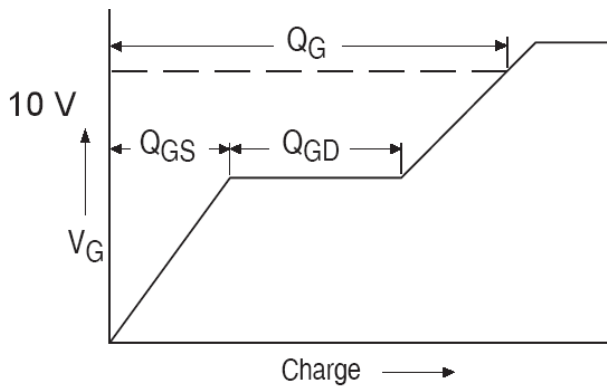


Fig 13a. Gate Charge Waveform

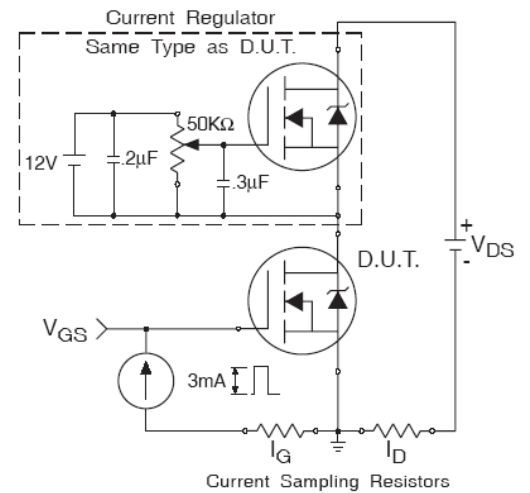
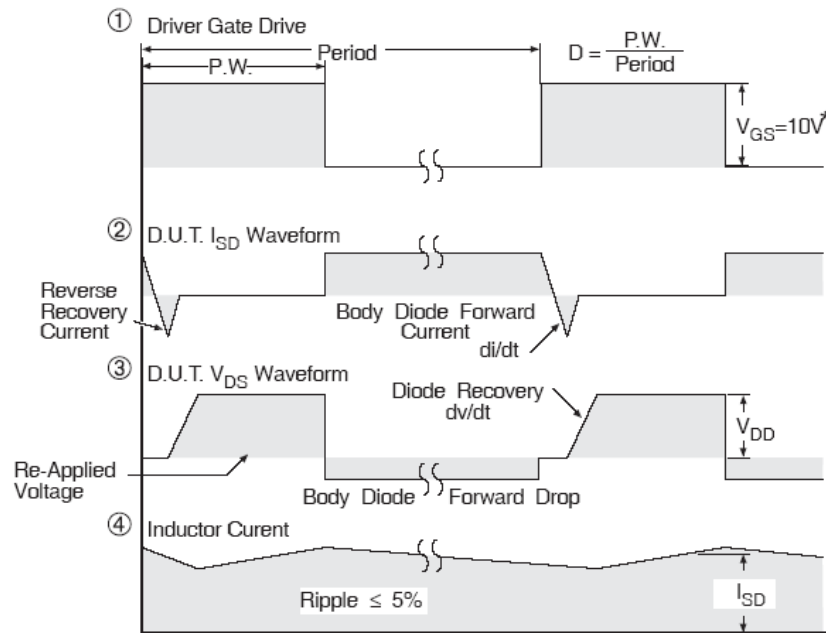
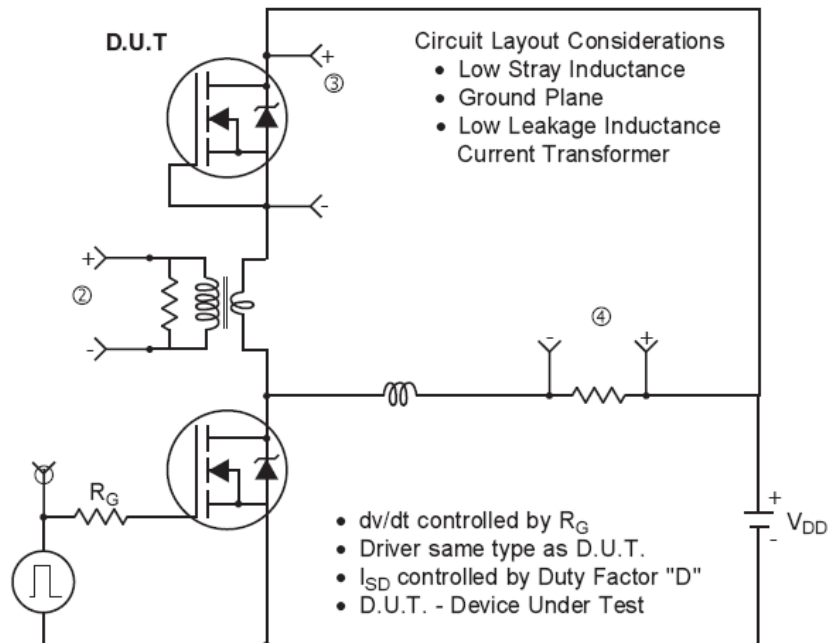


Fig 13b. Gate Charge Test Circuit

Peak Diode Recovery dv/dt Test Circuit



* $V_{GS} = 5V$ for Logic Level Devices

Fig 14. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

Technical drawing of a mechanical part, showing a front view and a side view. The front view includes dimensions: E (total width), E1 (inner width), D (total height), D1 (inner height), D2 (height of the lower section), L (length of the lower section), L1 (height of the lower section), b1 (width of the lower section), and a (width of the lower section). The side view includes dimensions: A (total width), A1 (inner width), H (height of the upper section), A2 (width of the lower section), and c (width of the lower section). The drawing also includes a table with the following data:

Symbol	Value	Unit	Material	Quantity
ϕ	0.381	(M)	AB	3x

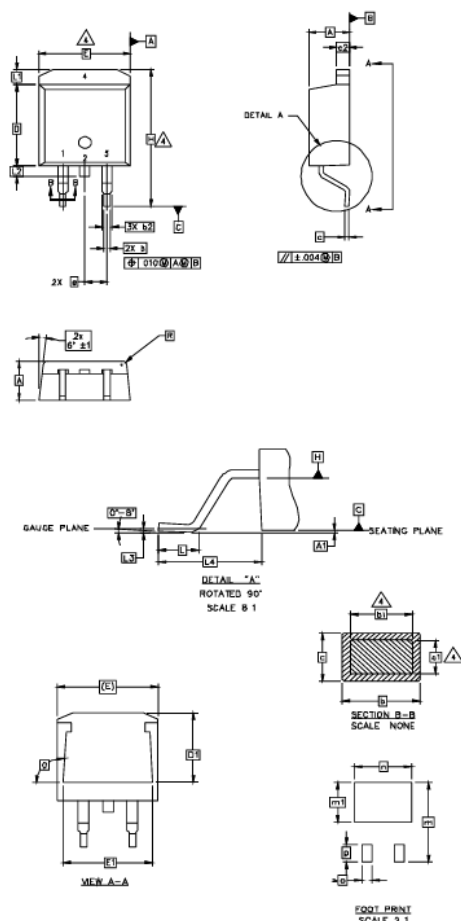
PACKAGE - GROUP NUMBER:		PG-TO220-3-U05	
DIMENSIONS	MILLIMETERS		
	MIN.	MAX.	
A	3.56	4.83	
A1	1.14	1.40	
A2	2.03	2.92	
b	0.38	1.01	
b1	1.14	1.78	
c	0.36	0.61	
D	14.22	16.51	
D1	8.38	9.20	
D2	11.68	12.88	
E	9.65	10.67	
E1	6.86	8.89	
e	2.54		
N	3		
H	5.84	6.86	
L	12.70	14.73	
L1	3.56	4.06	
øP	3.54	4.08	
Q	2.54	3.42	

The diagram shows a TO-18 package with the following markings and their locations:

- INFINEON LOGO**: Located at the top of the package, indicated by an arrow.
- PART #**: Located on the right side of the package, indicated by an arrow.
- 1234567890**: A 10-digit number located in the center of the package, indicated by an arrow.
- HYWWX**: A 5-character code located in the center of the package, indicated by an arrow.
- XX XX**: Two 2-character codes located at the bottom of the package, indicated by an arrow.
- ASSEMBLY LOT CODE 4 DIGITS**: Located on the left side of the package, indicated by an arrow.
- HALOGEN FREE: H**: Located on the right side of the package, indicated by an arrow.
- DATE CODE: YWW**: Located on the right side of the package, indicated by an arrow.
- SITE CODE: X**: Located on the right side of the package, indicated by an arrow.

Rev. 2.1, 2026-08-06

D² Pak (TO-263AB) Package Outline (Dimensions are shown in millimeters (inches))



NOTES

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [0.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.

4. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.

5 CONTROLLING DIMENSION INCH

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	.160	.190	
A1	0.00	0.254	.000	.010	
b	0.51	0.99	.020	.039	4
b1	0.51	0.89	.020	.035	
b2	1.14	1.78	.045	.070	
c	0.38	0.74	.015	.029	
c1	0.38	0.58	.015	.023	4
c2	1.14	1.65	.045	.065	
D	8.51	9.65	.335	.380	3
D1	6.86		.270		
E	9.65	10.67	.380	.420	3
E1	6.22		.245		
e	2.54 BSC		.100 BSC		
H	14.61	15.88	.575	.625	
L	1.78	2.79	.070	.110	
L1	1.27	1.65		.065	
L2	1.27	1.78	.050	.070	
L3	0.25 BSC		.010 BSC		
L4	4.78	5.28	.188	.208	
m	17.78		.700		
m1	8.89		.350		
n	11.43		.450		
a	2.08		.082		
p	3.81		.150		
R	0.51	0.71	.020	.028	
ø	90°	93°	90°	93°	

LEAD ASSIGNMENTS

HEXFET

- 1.- GATE
2, 4 - DRAIN
3.- SOURCE

IGBTs, CoPACK

- 1.- GATE
2, 4 - COLLECTOR
3.- EMITTER

DIODES

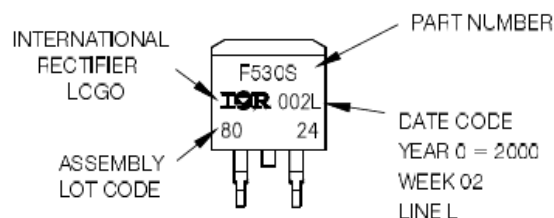
- 1.- ANODE *
2, 4 - CATHODE
3.- ANODE

* PART DEPENDENT.

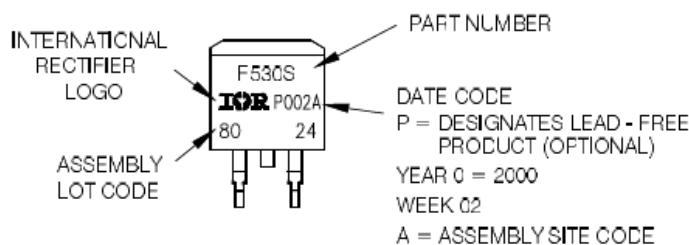
D² Pak (TO-263AB) Part Marking Information

EXAMPLE: THIS IS AN IRF530S WITH
LOT CODE 8024
ASSEMBLED ON WW 02, 2000
IN THE ASSEMBLY LINE 'L'

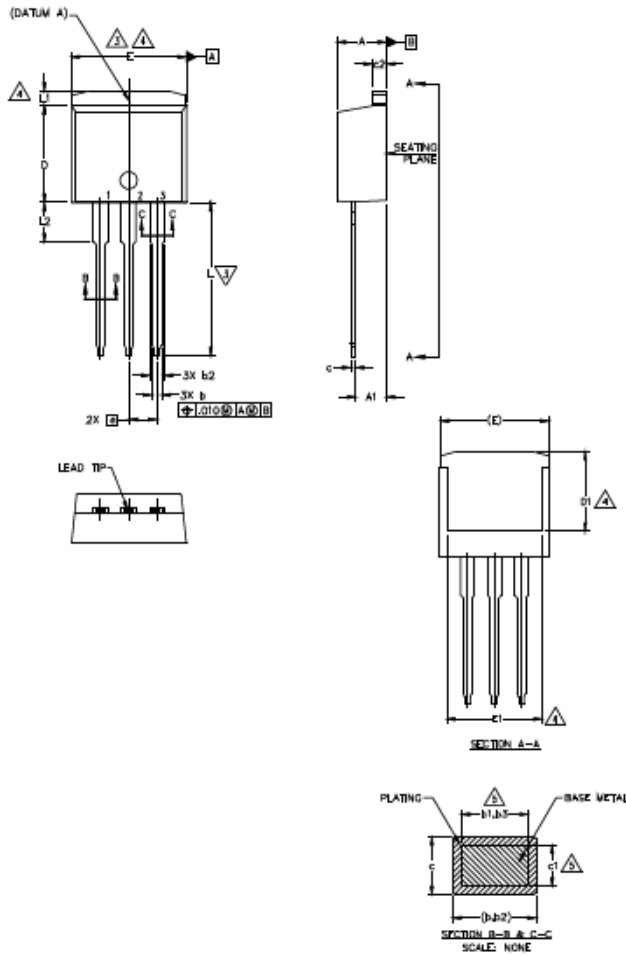
Note: "P" in assembly line position indicates "Lead - Free"



QR



TO-262 Package Outline (Dimensions are shown in millimeters (inches))



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES]
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [0.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
5. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
6. CONTROLLING DIMENSION: INCH.
7. OUTLINE CONFORM TO JEDEC TO-262 EXCEPT A1(max.), b(min.) AND D1(min.) WHERE DIMENSIONS DERIVED THE ACTUAL PACKAGE OUTLINE.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	.160	.190	
A1	2.03	3.02	.080	.119	
b	0.51	0.99	.020	.039	
b1	0.51	0.89	.020	.035	5
b2	1.14	1.78	.045	.070	
b3	1.14	1.73	.045	.068	5
c	0.38	0.74	.015	.029	
c1	0.38	0.58	.015	.023	5
c2	1.14	1.65	.045	.065	
D	8.38	9.65	.330	.380	3
D1	6.86	—	.270	—	4
E	9.65	10.67	.380	.420	3, 4
E1	6.22	—	.245	—	4
e	2.54 BSC		.100 BSC		
L	13.46	14.10	.530	.555	
L1	—	1.65	—	.065	4
L2	3.56	3.71	.140	.146	

LEAD ASSIGNMENTS

HEMIFET

- 1.— GATE
- 2.— DRAIN
- 3.— SOURCE
- 4.— DRAIN

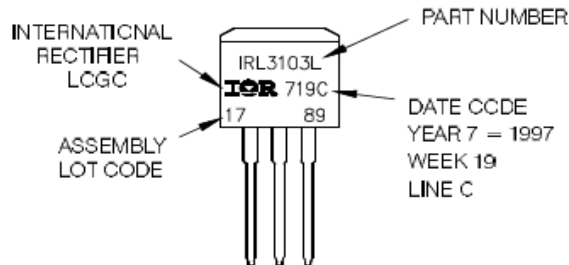
IGBTs, CoPACK

- 1.— GATE
- 2.— COLLECTOR
- 3.— EMITTER
- 4.— COLLECTOR

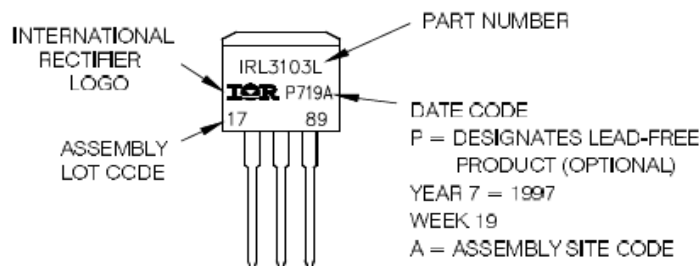
TO-262 Part Marking Information

EXAMPLE: THIS IS AN IRL3103L
LOT CODE 1789
ASSEMBLED ON WW 19, 1997
IN THE ASSEMBLY LINE 'C'

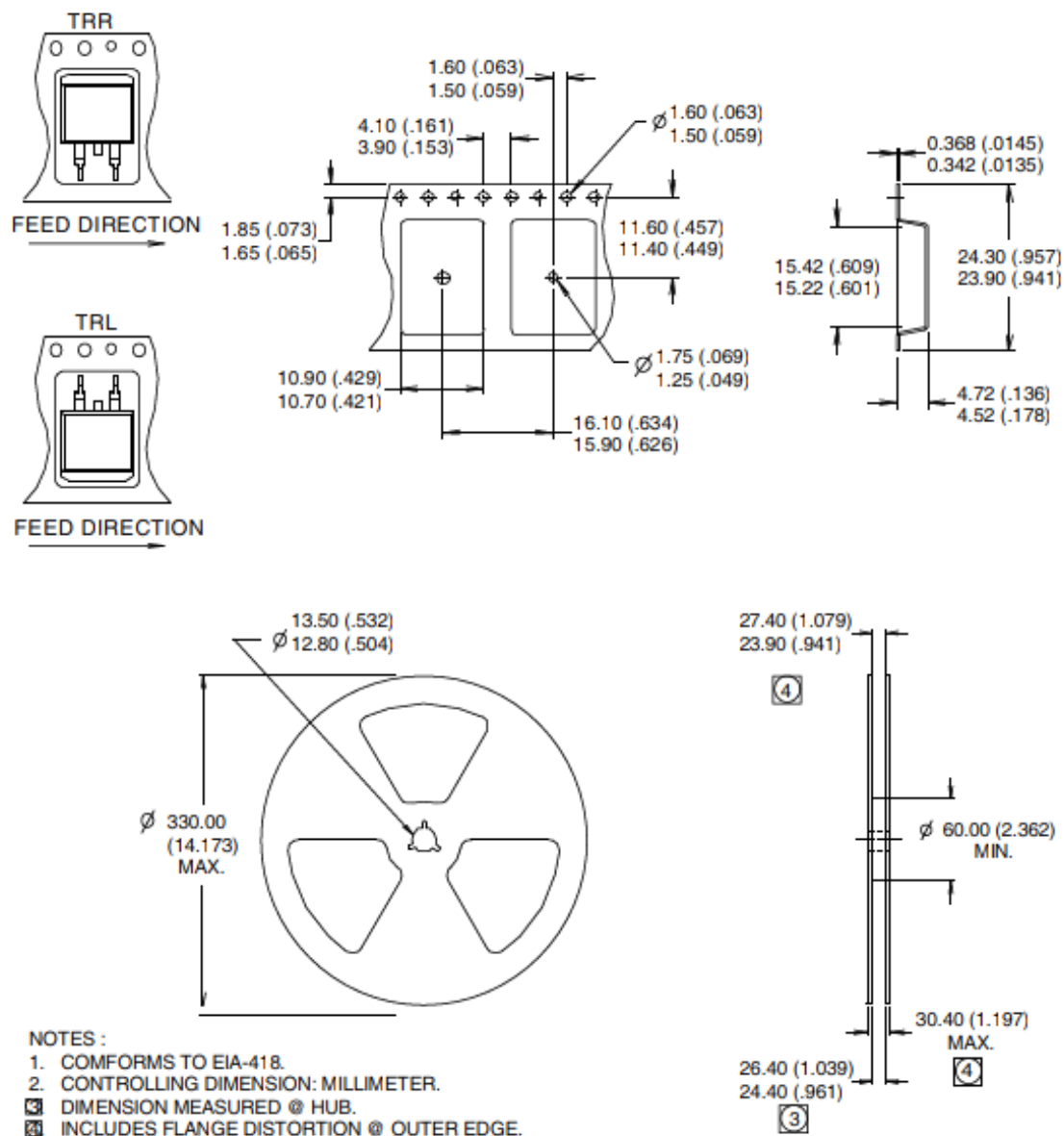
Note: "P" in assembly line position indicates "Lead - Free"



OR



D² Pak (TO-263AB) Tape & Reel Information (Dimensions are shown in millimeters (inches))



Revision History

Date	Rev.	Comments
2026-08-06	2.1	- Update datasheet to Infineon format - Updated Package Outline and Part marking –page 8 - Added disclaimer on last page.

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