英飞凌HEXFET ®功率MOSFET

应用

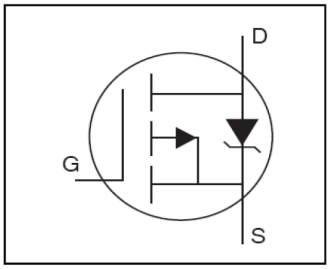
- 用于有源钳位复位型 DC-DC 转换器的复位开关

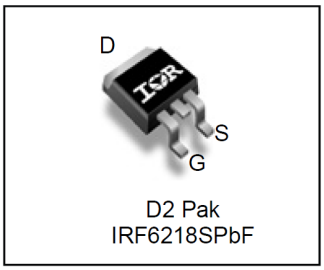
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优点

- 降低栅漏电荷以减少开关损耗
- 包含有效C_{OSS}的全面表征电容，以简化设计（参见应用注AN1001）
- 已全面测定的雪崩电压和电流
- 无铅

V_{DSS}	$R_{DS(on)}$ (max)	I_D
- 150V	**150mΩ @ V_{GS} = -10V**	**-27A**





G	D	S
Gate	Drain	Source

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRF6218SPbF	D2-Pak	Tube	50	IRF6218SPbF
		Tape and Reel Left	800	IRF6218STRLPbF

绝对最大额定值

Symbol	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	-150	V
V_{GS}	Gate-to-Source Voltage	± 20	
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	- 27	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	-19	
I_{DM}	Pulsed Drain Current ①	- 110	
P_D @T_C = 25°C	Maximum Power Dissipation	250	W
	Linear Derating Factor	1.6	W/°C
dv/dt	Peak Diode Recovery dv/dt③	8.2	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 175	°C
	Soldering Temperature, for 10 seconds (1.6mm from case)	300	

热阻

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case ⑤	---	0.61	°C/W
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount, steady state) ⑥	---	40	

注释①至 ⑥ 见第2页

本数据手册的原文使用英文撰写。为方便起见，英飞凌提供了译文；由于翻译过程中可能使用了自动化工具，英飞凌不保证译文的准确性。 为确认准确性，请务必访问 infineon.com 参考最新的英文版本（控制文档）。

静态参数特性在 T_J = 25°C 时测得（除非另有规定）

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-150	---	---	V	V_{GS} = 0V, I_D = -250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	---	-0.17	---	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	---	120	150	mΩ	V_{GS} = -10V, I_D = -16A ④
$V_{GS(th)}$	Gate Threshold Voltage	-3.0	---	- 5.0	V	V_{DS} = V_{GS}, I_D = -250μA
I_{DSS}	Drain-to-Source Leakage Current	---	---	-25	μA	V_{DS} = -120V, V_{GS} = 0V
		---	---	-250		V_{DS} = -120V,V_{GS} = 0V,T_J = 150°C
I_{GSS}	Gate-to-Source Forward Leakage	---	---	-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	---	---	100		V_{GS} = 20V

动态 @ T_J = 25°C（除非另有说明）

gfs	Forward Trans conductance	11	---	---	S	V_{DS} = -50V, I_D = -16A
Q_g	Total Gate Charge	---	71	110	nC	I_D = -16A V_{DS} = -120V V_{GS} = -10V ④
Q_{gs}	Gate-to-Source Charge	---	21	---		
Q_{gd}	Gate-to-Drain ('Miller') Charge	---	32	---		
$t_{d(on)}$	Turn-On Delay Time	---	21	---	ns	V_{DD} = -75V I_D = -16A R_G = 3.9Ω V_{GS} = -10V ④
t_r	Rise Time	---	70	---		
$t_{d(off)}$	Turn-Off Delay Time	---	35	---		
t_f	Fall Time	---	30	---		
C_{iss}	Input Capacitance	---	2210	---	pF	V_{GS} = 0V V_{DS} = -25V ƒ = 1.0MHz
C_{oss}	Output Capacitance	---	370	---		
C_{rss}	Reverse Transfer Capacitance	---	89	---		
C_{oss}	Output Capacitance	---	2220	---		V_{GS} = 0V, V_{DS} = -1.0V, ƒ = 1.0MHz
C_{oss}	Output Capacitance	---	170	---		V_{GS} = 0V, V_{DS} = -120V, ƒ = 1.0MHz
$C_{oss\ eff.}$	Effective Output Capacitance	---	340	---		V_{GS} = 0V, V_{DS} = 0V to -120V

雪崩特性

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	---	210	mJ
I_{AR}	Avalanche Current ①	---	-16	A

二极管特性

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	---	---	-27	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	---	---	-110		
V_{SD}	Diode Forward Voltage	---	---	-1.6	V	T_J = 25°C,I_S = -16A,V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	---	150	---	ns	T_J = 25°C ,I_F = -16A, V_{DD} = -25V di/dt = 100A/μs ④
Q_{rr}	Reverse Recovery Charge	---	860	---	nC	

注:

② 重复额定值；脉冲宽度受最高结温限制。

② starting T_J = 25°C, L = 1.6mH, R_G = 25Ω, I_{AS} = -17A

③ I_{SD} ≤ -17A, di/dt ≤ -520A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 175°C.

④ 脉冲宽度 ≤ 300μs; 占空比 ≤ 2%。

⑧R_θ 在 T_J 约 90°C 时测得。

⑦安装在 1 英寸方形PCB （FR-4 或 G-10 材料）上时。关于推荐的封装和焊接技术，请参阅应用笔记 #AN-994。

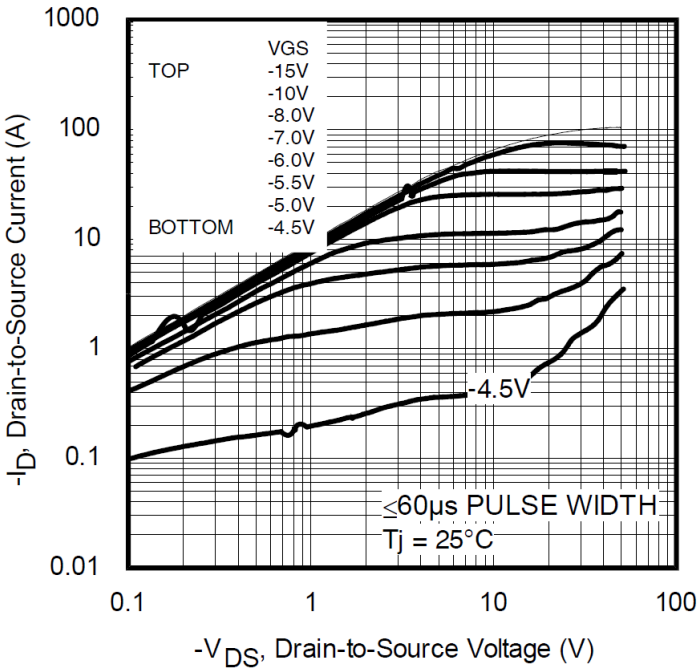


Fig. 1 Typical Output Characteristics

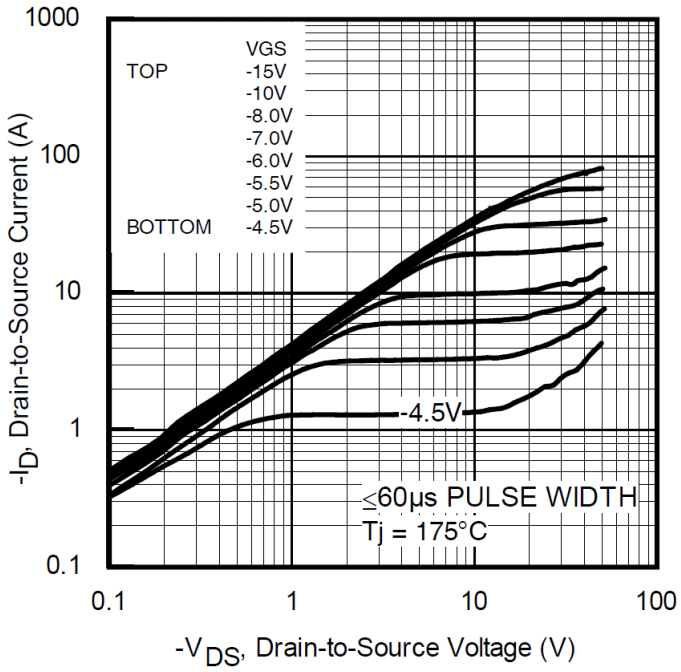


Fig. 2 Typical Output Characteristics

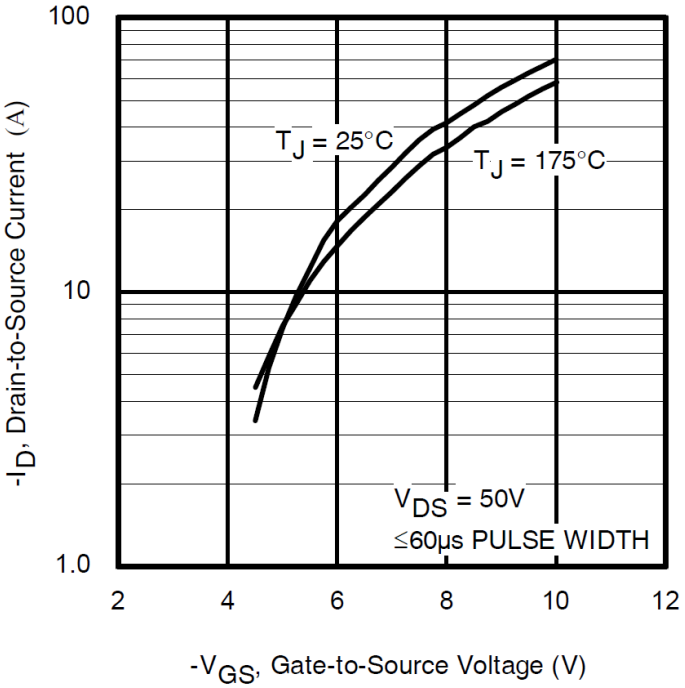


Fig. 3 Typical Transfer Characteristics

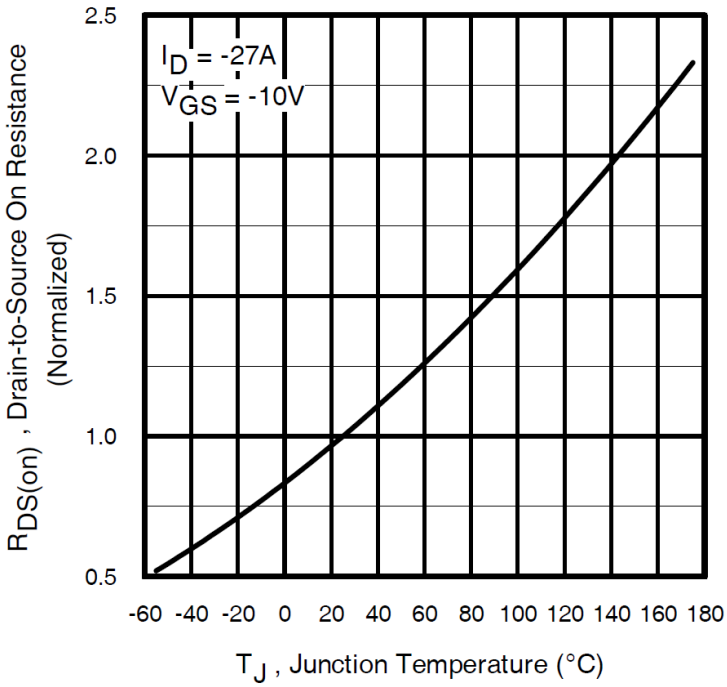


Fig. 4 Normalized On-Resistance vs. Temperature

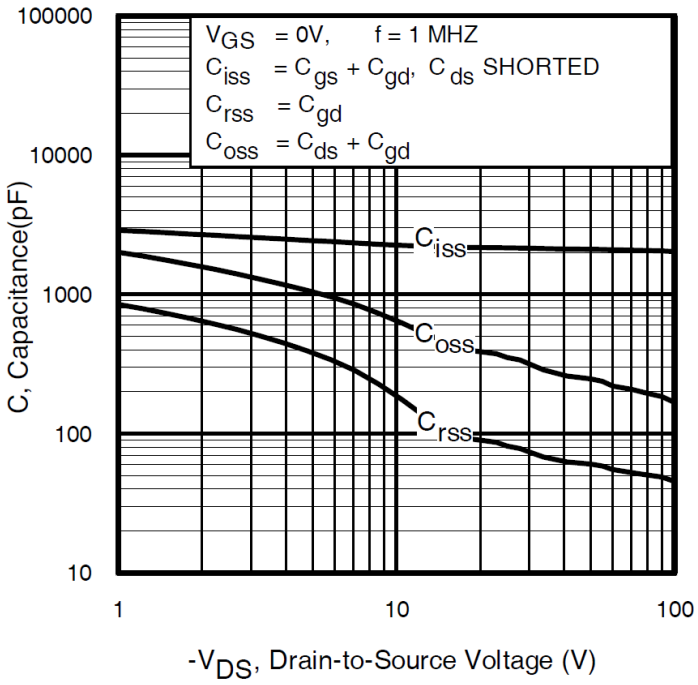


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

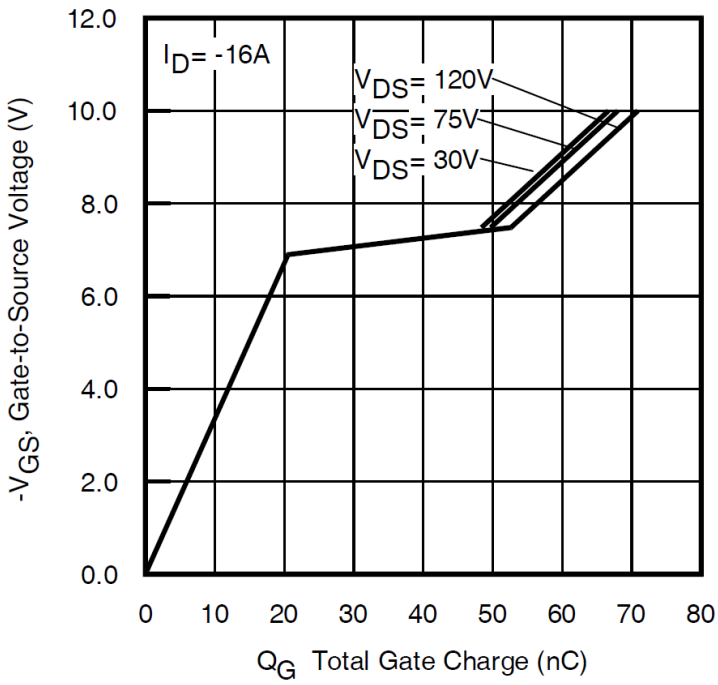


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

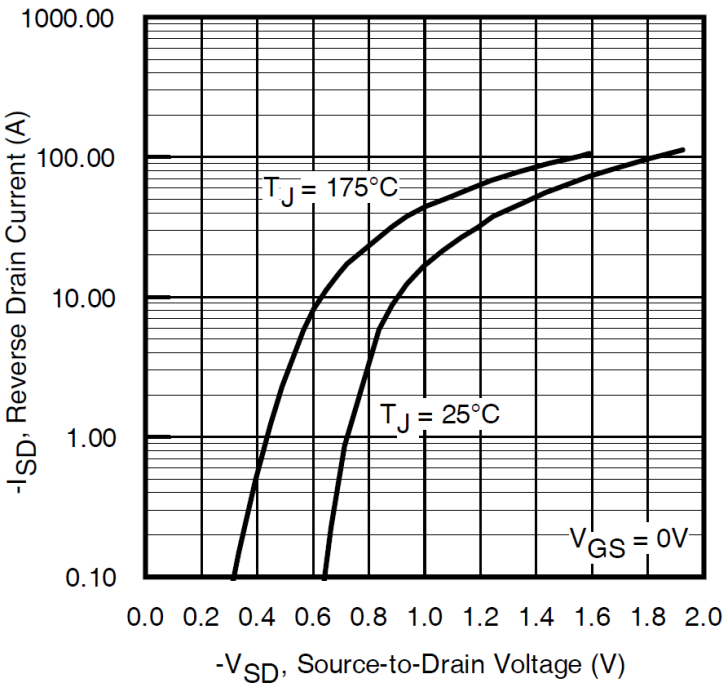


Fig. 7 Typical Source-to-Drain Diode Forward Voltage

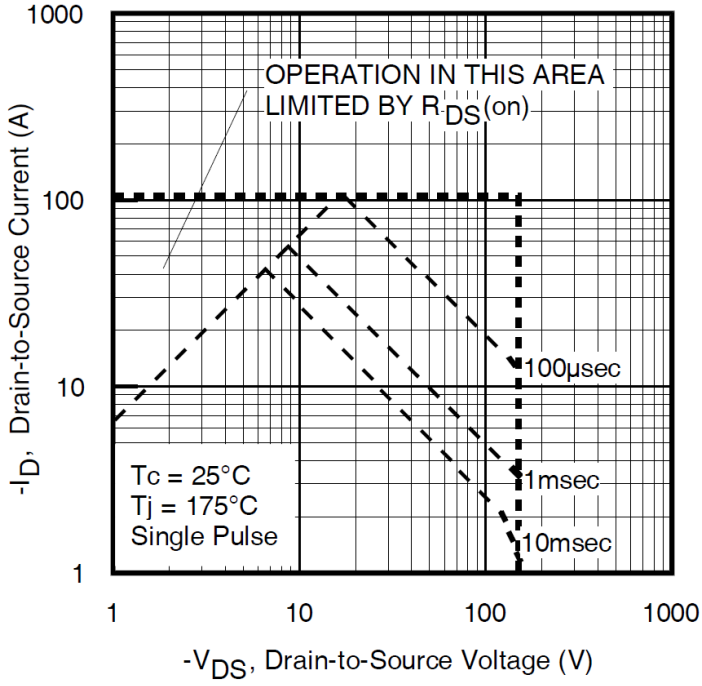


Fig 8. Maximum Safe Operating Area

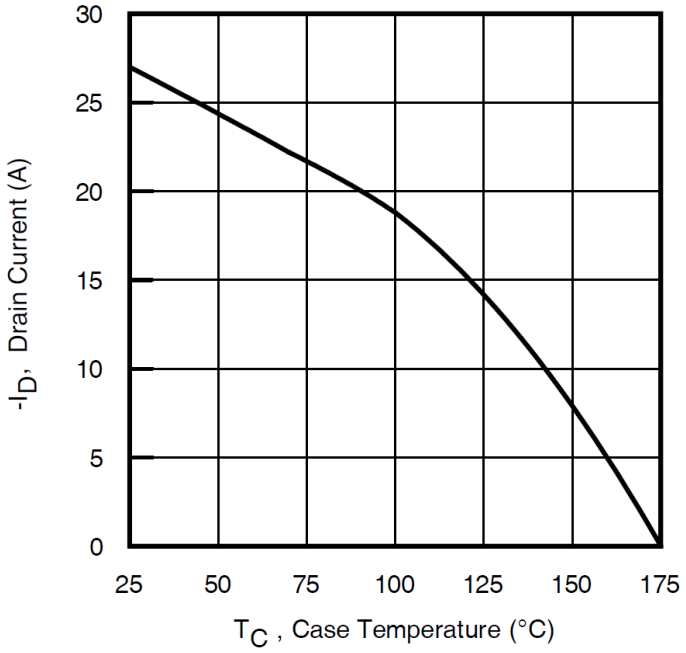


Fig 9. Maximum Drain Current vs. Case Temperature

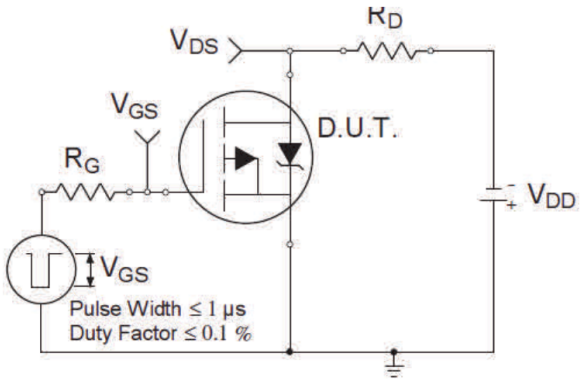


Fig 10a. Switching Time Test Circuit

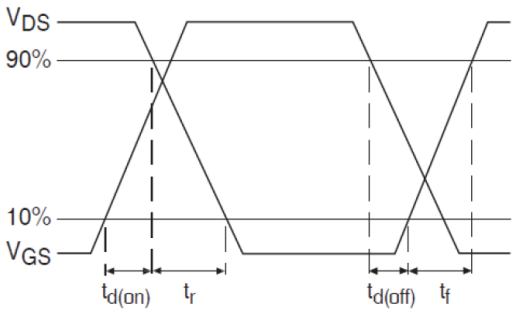


Fig 10b. Switching Time Waveforms

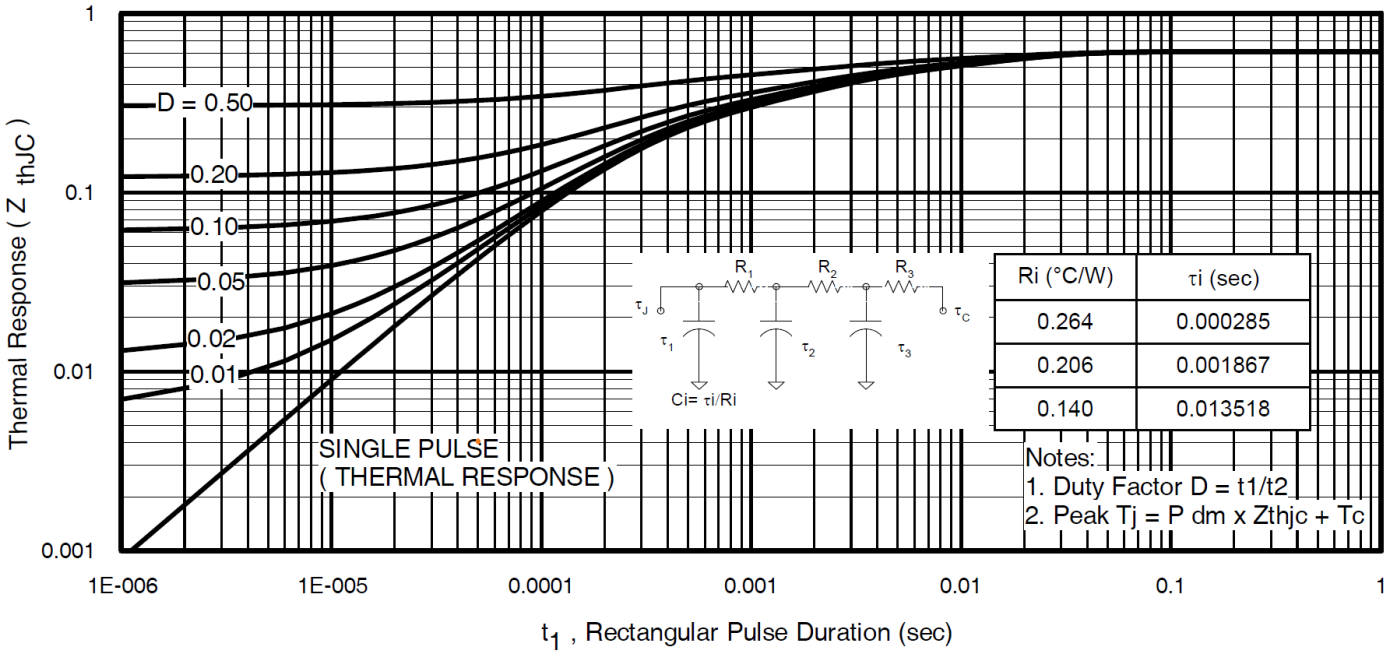


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

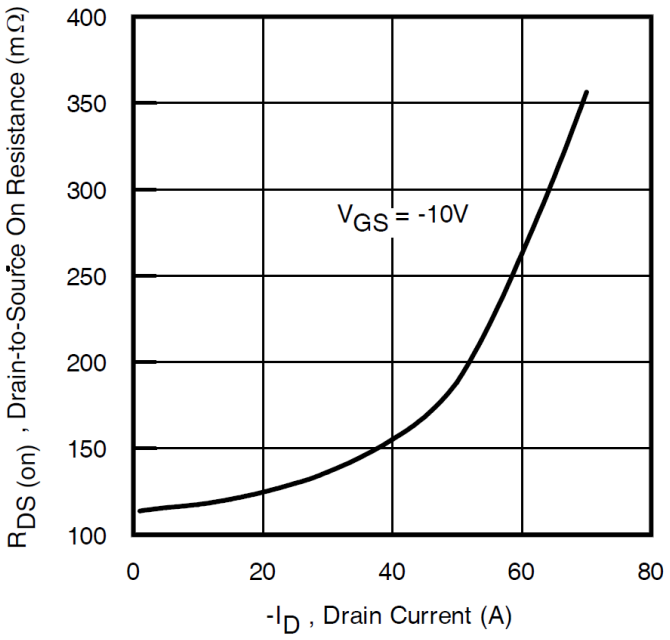


Fig 12. On-Resistance vs. Drain Current

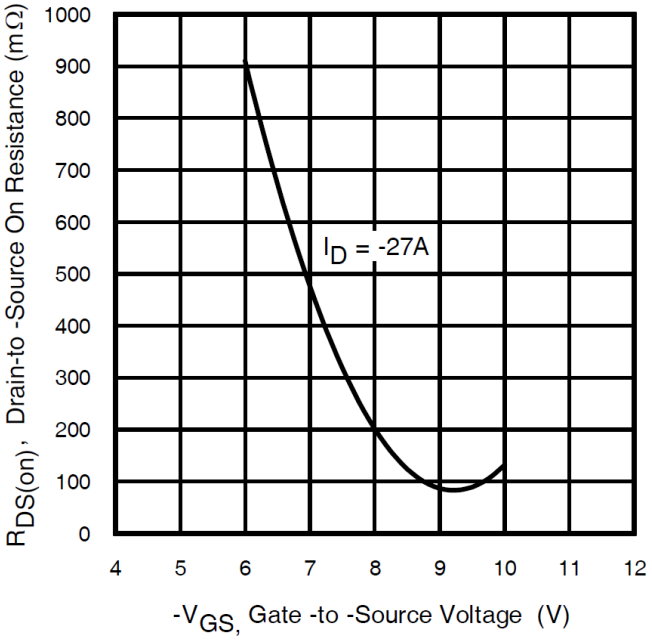


Fig 13. On-Resistance vs. Gate Voltage

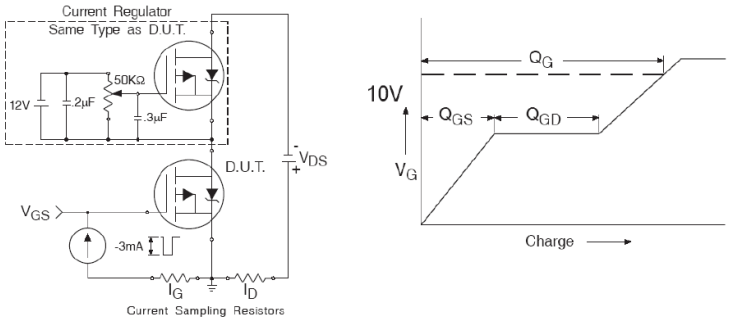


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

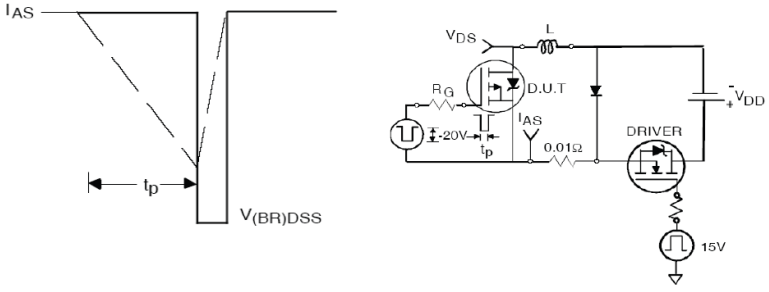


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

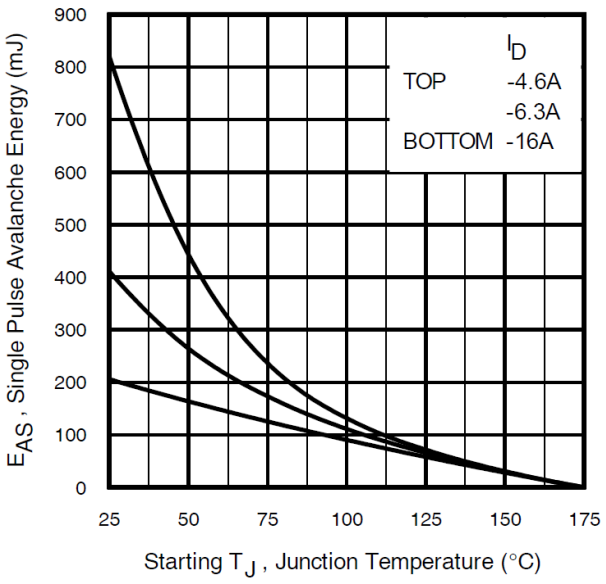
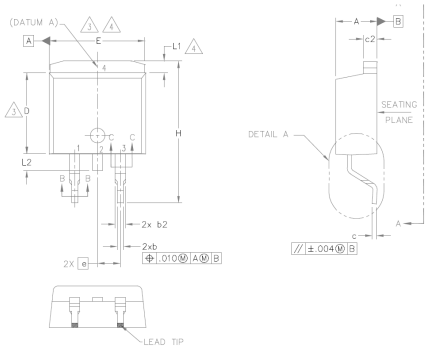


Fig 15c. Maximum Avalanche Energy vs. Drain Current

D-2 Pak (TO-263AB) 封装外形（尺寸以毫米（英寸）为单位）



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 [.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY AT DATUM H.
4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
5. DIMENSION b1, b3 AND c1 APPLY TO BASE METAL ONLY.
6. DATUM A & B TO BE DETERMINED AT DATUM PLANE H.
7. CONTROLLING DIMENSION: INCH.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-263AB.

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	
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		
H	14.61	15.88	.575	.625	
L	1.78	2.79	.070	.110	
L1	–	1.68	–	.066	4
L2	–	1.78	–	.070	
L3	0.25 BSC		.010 BSC		

LEAD ASSIGNMENTS

DIODES

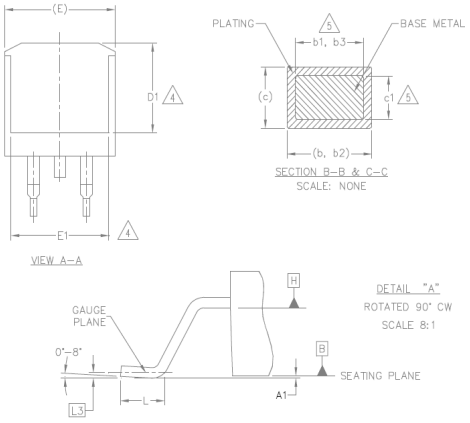
1.– ANODE (TWO DIE) / OPEN (ONE DIE)
2, 4.– CATHODE
3.– ANODE

HEXFET

1.– GATE
2, 4.– DRAIN
3.– SOURCE

IGBTs, CoPACK

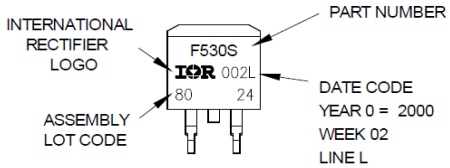
1.– GATE
2, 4.– COLLECTOR
3.– EMITTER



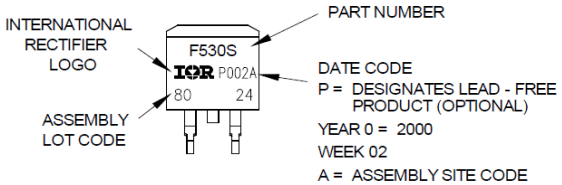
D2-Pak（TO-263AB）零件信息标识

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"

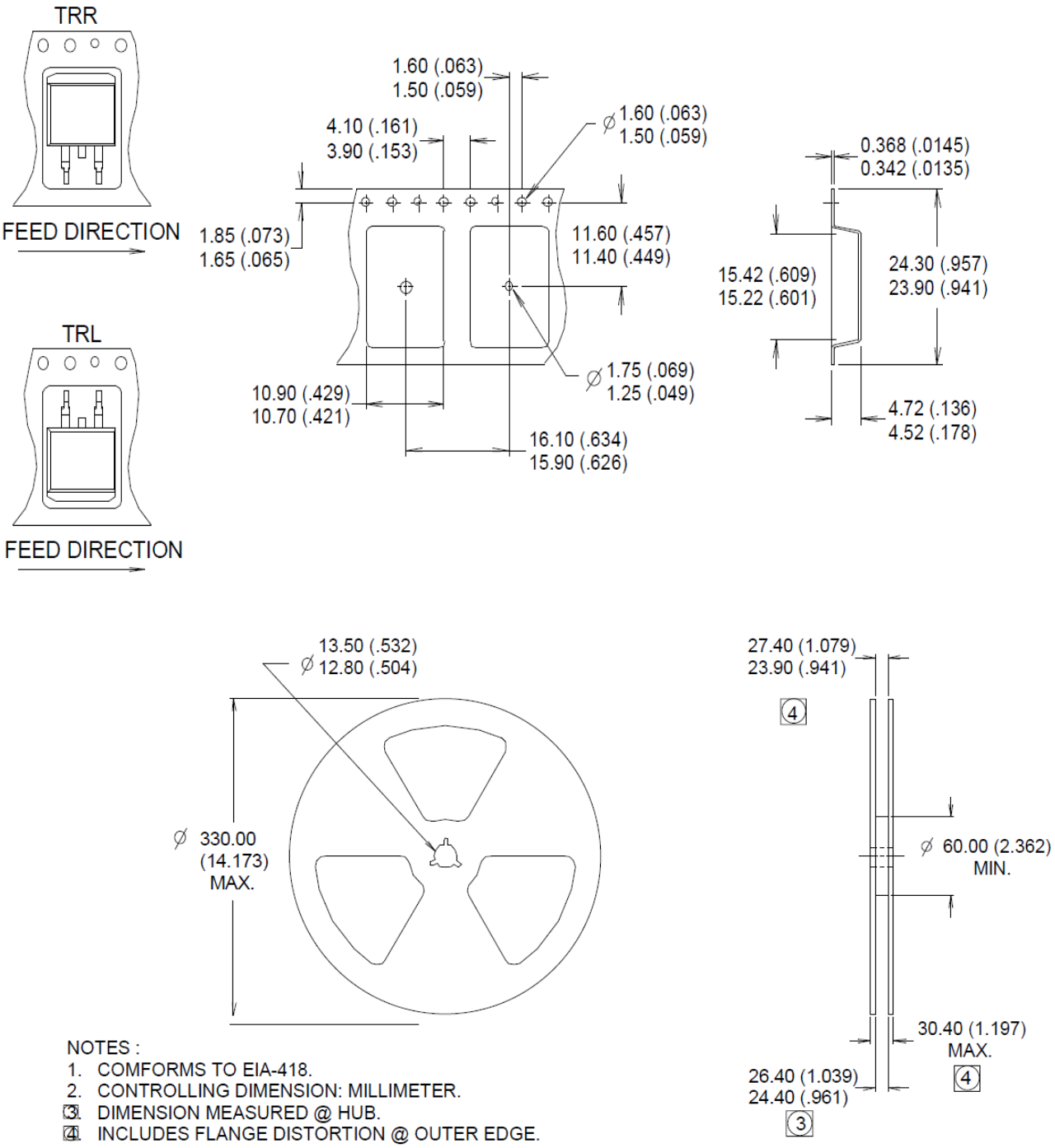


OR



注：有关最新图纸，请参阅英飞凌网站 https://www.infineon.cn/ 及其链接。

D2-Pak （TO-263AB）卷料和带料信息 （尺寸以毫米（英寸）为单位）



NOTES :
1. COMFORMS TO EIA-418.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION MEASURED @ HUB.
4. INCLUDES FLANGE DISTORTION @ OUTER EDGE.

注：有关最新图纸，请参阅英飞凌网站 https://www.infineon.cn/ 及其链接。

资格信息†

Qualification Level	Industrial (per JEDEC JESD47F) ††	
Moisture Sensitivity Level	D2-Pak	MSL1 (per JEDEC J-STD-020D) ††
RoHS Compliant	Yes	

† 质量标准相关信息请参阅英飞凌网站 https://www.infineon.cn/ 及其链接。

†† 产品发布时的 JEDEC 标准适用版本。

修订记录

Date	Comments
3/25/2015	• Updated datasheet based on IR corporate template. • Updated package outline and part marking on page 7. • Removed TO-262 Pak (IRF6218LPbF) from datasheet-all pages
5/26/2016	• Updated datasheet with corporate template. • Added disclaimer on last page.

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