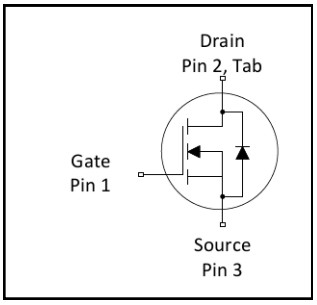
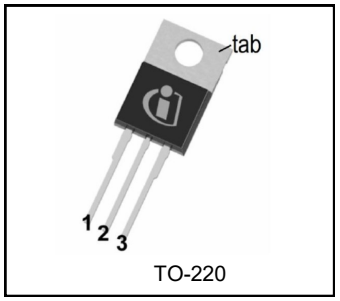
IRFB4227PbF

V_{DS} max	200V
$V_{DS\ (Avalanche)}$ typ.	240V
$R_{DS(ON)}$ typ. @ 10V	19.7mΩ
I_{RP} max @ T_C= 100°C	130A
T_J max	175°C





G	D	S
Gate	Drain	Source

Features

- Advanced Process Technology
- Key Parameters Optimized for PDP Sustain, Energy Recovery and Pass Switch Applications
- Low E_{PULSE} Rating to Reduce Power Dissipation in PDP Sustain, Energy Recovery and Pass Switch Applications
- Low Q_G for Fast Response
- High Repetitive Peak Current Capability for Reliable Operation
- Short Fall & Rise Times for Fast Switching
- 175°C Operating Junction Temperature for Improved Ruggedness
- Repetitive Avalanche Capability for Robustness and Reliability
- Class-D Audio Amplifier 300W-500W (Half-bridge)

Description

This HEXFET Power MOSFET is specifically designed for Sustain; Energy Recovery and Pass switch applications in Plasma Display Panels. This MOSFET utilizes the latest processing techniques to achieve low on-resistance per silicon area and low E_{PULSE} rating. Additional features of this MOSFET are a 175°C junction operating temperature and high repetitive peak current capability. These features combine to make this MOSFET a highly efficient, robust and reliable device for PDP driving applications.

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRFB4227PbF	TO-220	Tube	50	IRFB4227PbF

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{GS}	Gate-to-Source Voltage	± 30	V
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	65	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	46	
I_{DM}	Pulsed Drain Current ①	260	
I_{RP} @ TC = 100°C	Repetitive Peak Current ⑤	130	
P_D @T_C = 25°C	Power Dissipation	330	W
P_D @T_C = 100°C	Power Dissipation	190	
	Linear Derating Factor	2.2	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-40 to + 175	°C
	Soldering Temperature, for 10 seconds (1.6mm from case)	300	
	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 ④	—	0.45	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient ④	—	62	

Notes ① through ⑥ are on page 7

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	200	—	—	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	170	—	mV/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	19.7	24	mΩ	V_{GS} = 10V, I_D = 46A ③
$V_{GS(th)}$	Gate Threshold Voltage	3.0	—	5.0	V	V_{DS} = V_{GS}, I_D = 250µA
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold VoltageTemp. Coefficient	—	-13	—	mV/°C	
I_{DSS}	Drain-to-Source Leakage Current	—	—	20	µA	V_{DS} = 200V, V_{GS} = 0V
		—	—	1.0	mA	V_{DS} = 200V,V_{GS} = 0V,T_J =125°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -20V
gfs	Forward Trans conductance	49	—	—	S	V_{DS} = 25V, I_D = 46A
Q_g	Total Gate Charge	—	70	98	nC	I_D = 46A,V_{DS} = 100V
Q_{gd}	Gate-to-Drain Charge	—	23	—		V_{GS} = 10V③
$t_{d(on)}$	Turn-On Delay Time	—	33	—	ns	V_{DD} = 100V
t_r	Rise Time	—	20	—		I_D = 46A
$t_{d(off)}$	Turn-Off Delay Time	—	21	—		R_G= 2.5Ω
t_f	Fall Time	—	31	—		V_{GS} = 10V③
t_{st}	Shoot Through Blocking Time	100	—	—	ns	V_{DD} = 160V, V_{GS} = 15V, R_G= 4.7Ω
E_{PULSE}	Energy per Pulse	—	570	—	µJ	L = 220nH, C= 0.4µF, V_{GS} = 15V V_{DS} = 160V, R_G= 4.7Ω, T_J = 25°C
		—	910	—		L = 220nH, C= 0.4µF, V_{GS} = 15V V_{DS} = 160V, R_G= 4.7Ω, T_J = 100°C
C_{iss}	Input Capacitance	—	4600	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	460	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	91	—		f = 1.0MHz
$C_{oss\ eff.}$	Effective Output Capacitance	—	360	—		V_{GS} = 0V, V_{DS} = 0V to 160V
L_D	Internal Drain Inductance	—	4.5	—	nH	Between lead,6mm (0.25in.) from package and center of die contact
L_S	Internal Source Inductance	—	7.5	—		

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy (Thermally Limited) ②	—	140	mJ
I_{AR}	Repetitive Avalanche Energy ①	—	33	mJ
$V_{DS(Avalanche)}$	Repetitive Avalanche Voltage ①	240	—	V
I_{AS}	Avalanche Current ①②	—	39	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S @ T_C = 25°C	Continuous Source Current (Body Diode)	—	—	65	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	260		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J = 25°C,I_S = 46A,V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	100	150	ns	T_J = 25°C, I_F = 46A , V_{DD} = 50V
Q_{rr}	Reverse Recovery Charge	—	460	640	nC	di/dt = 100A/µs ③

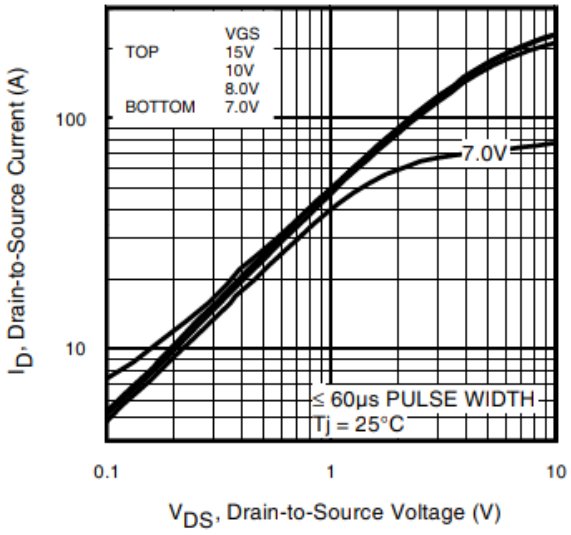


Fig. 1 Typical Output Characteristics

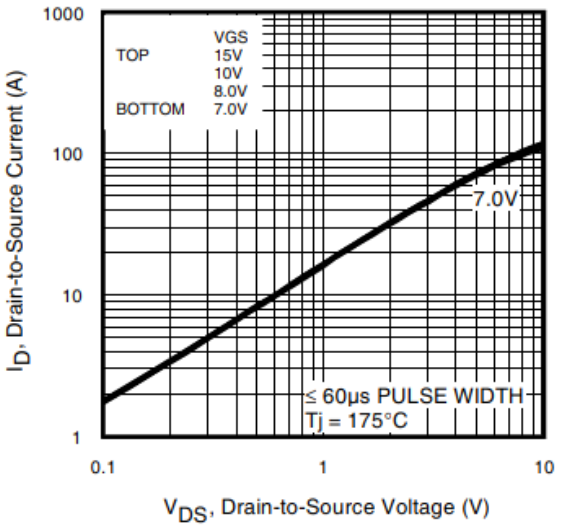


Fig. 2 Typical Output Characteristics

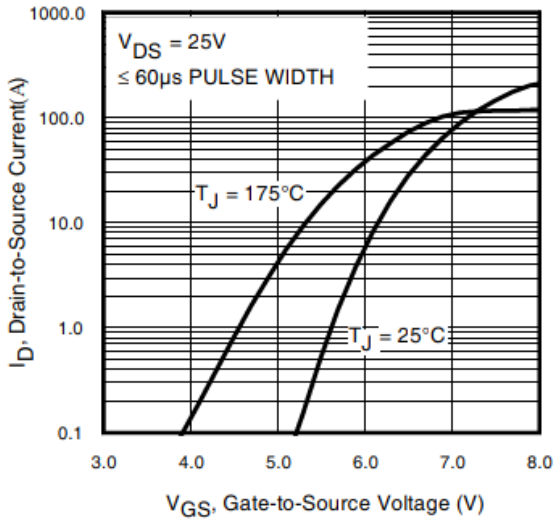


Fig. 3 Typical Transfer Characteristics

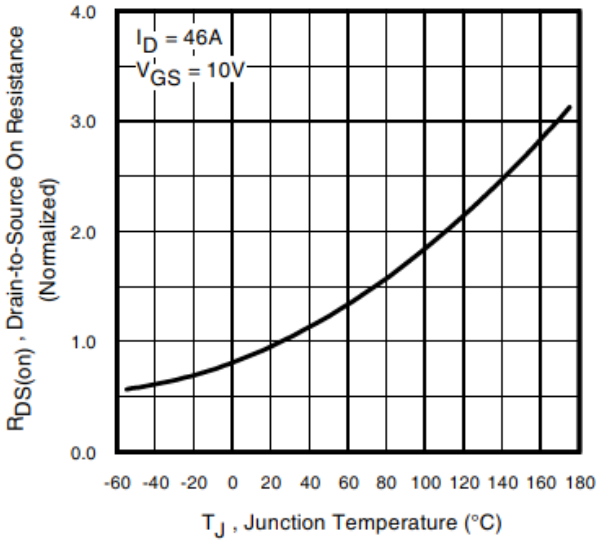


Fig. 4 Normalized On-Resistance vs. Temperature

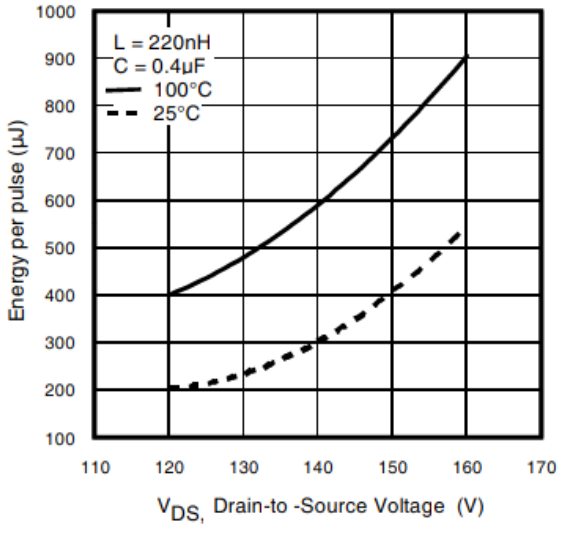


Fig 5. Typical E_{PULSE} vs. Drain-to-Source Voltage

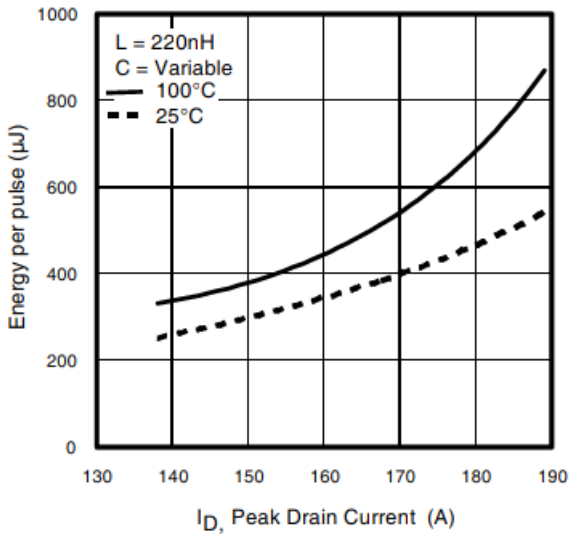


Fig 6. Typical E_{PULSE} vs. Drain Current

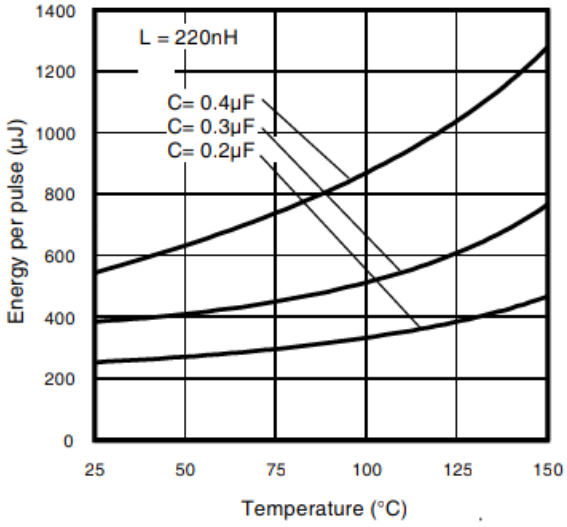


Fig. 7 Typical E_{PULSE} vs. Temperature

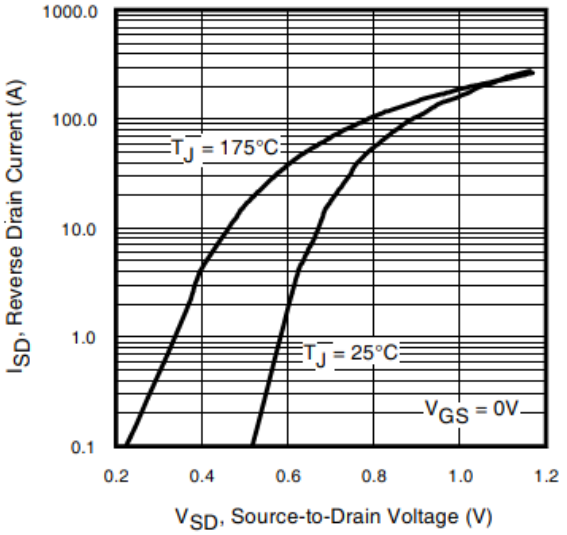


Fig 8. Typical Source-Drain Diode Forward Voltage

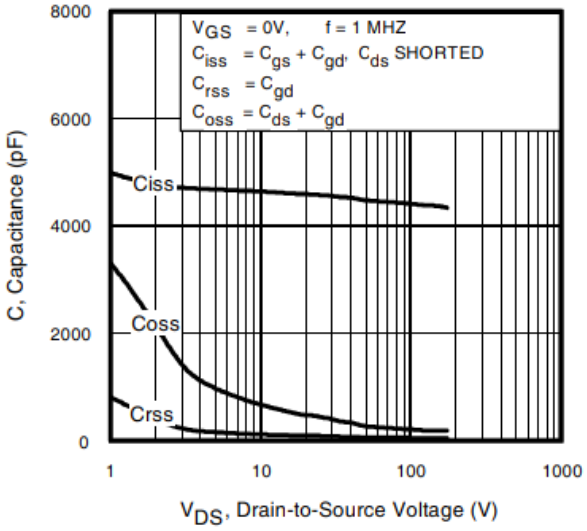


Fig 9. Typical Capacitance vs. Drain-to-Source Voltage

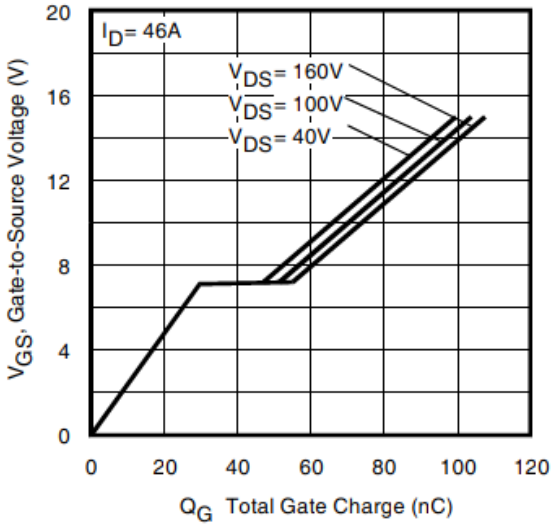


Fig 10. Typical Gate Charge vs. Gate-to-Source Voltage

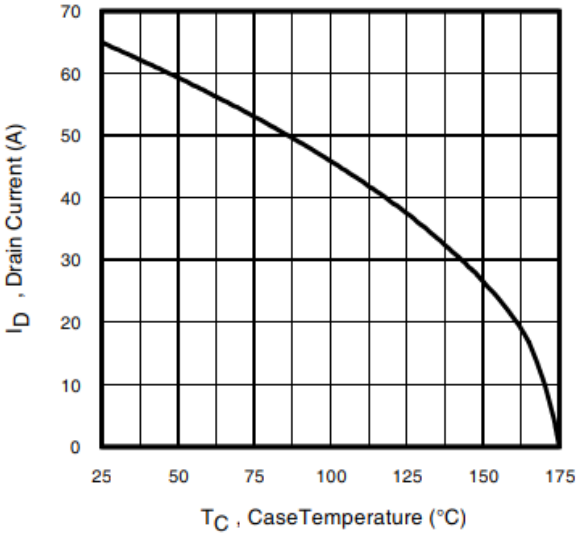


Fig 11. Maximum Drain Current vs. Case Temperature

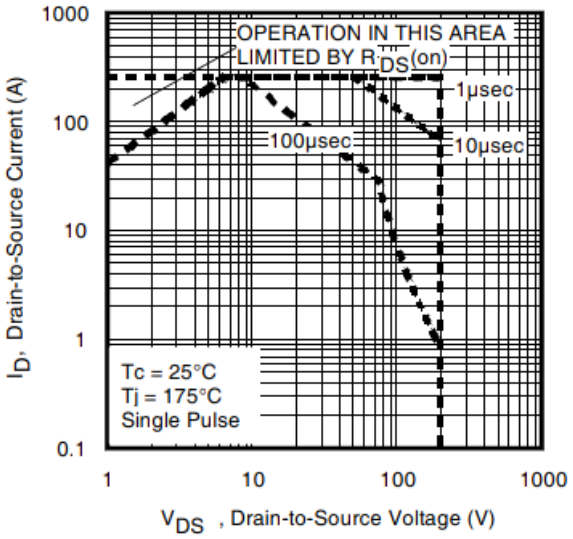


Fig 12. Maximum Safe Operating Area

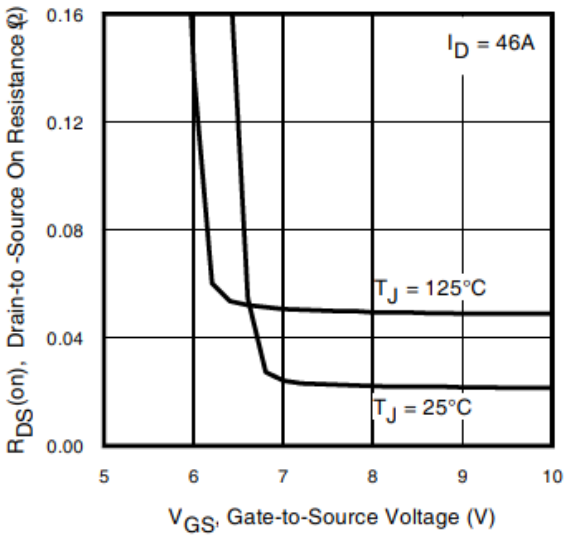


Fig. 13. On-Resistance Vs. Gate Voltage

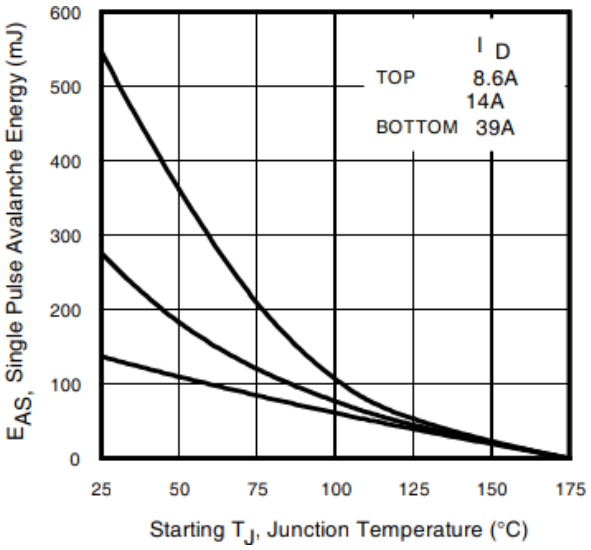


Fig 14. Maximum Avalanche Energy Vs. Temperature

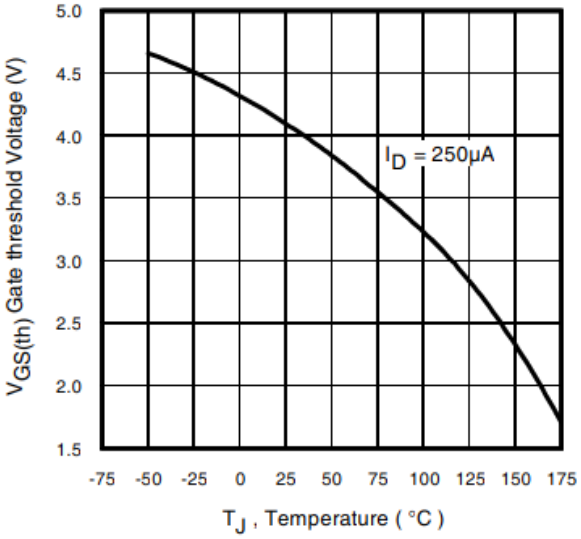


Fig 15. Threshold Voltage vs. Temperature

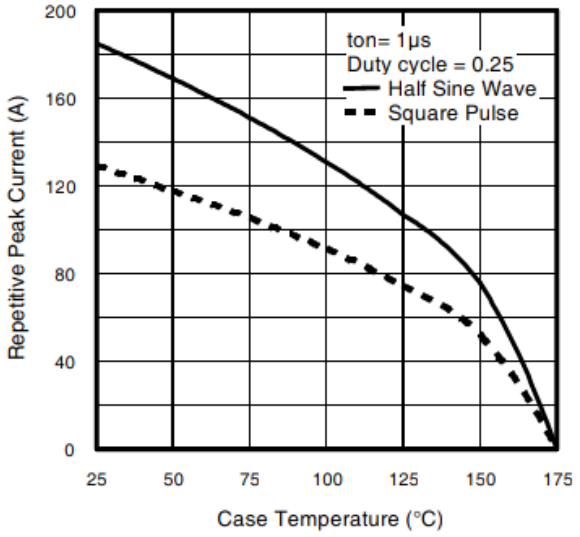


Fig 16. Typical Repetitive peak Current vs. Case temperature

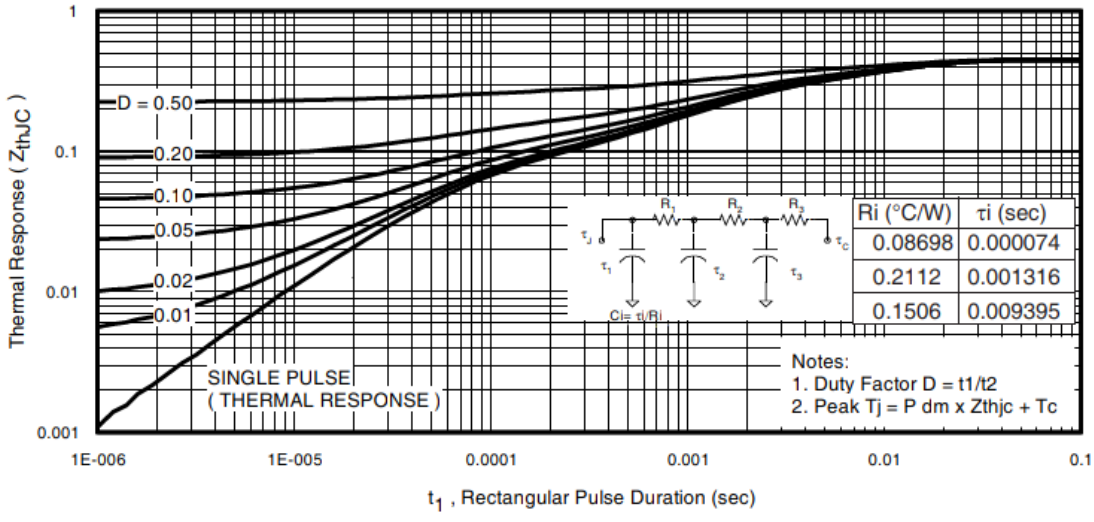


Fig 17. Maximum Effective Transient Thermal Impedance, Junction-to-Case

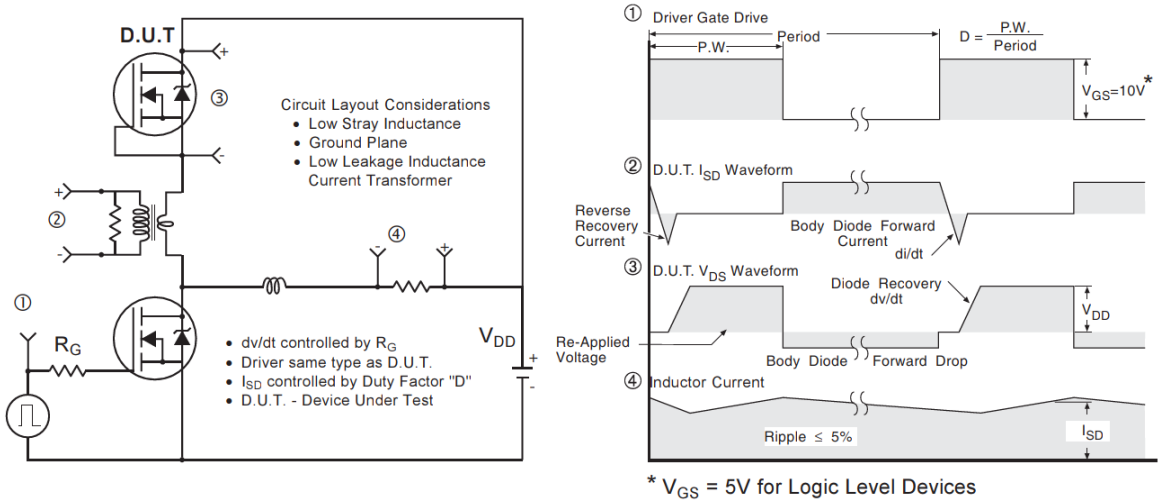


Fig 18. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

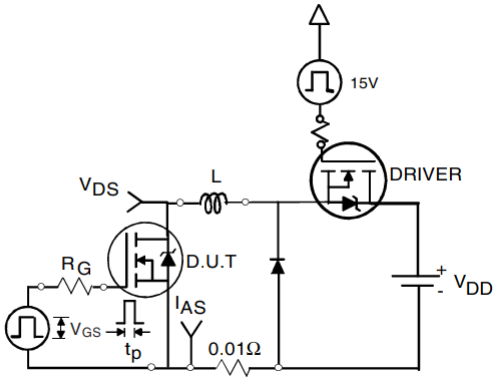


Fig 19a. Unclamped Inductive Test Circuit

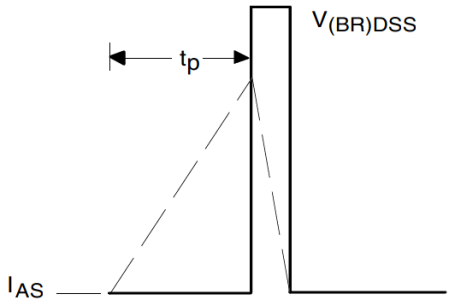


Fig 19b. Unclamped Inductive Waveforms

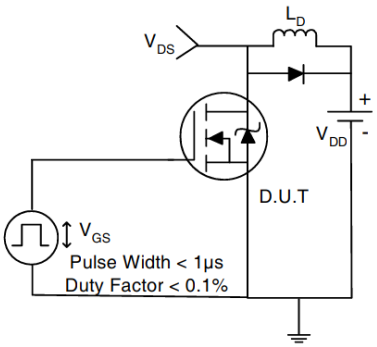


Fig 20a. Switching Time Test Circuit

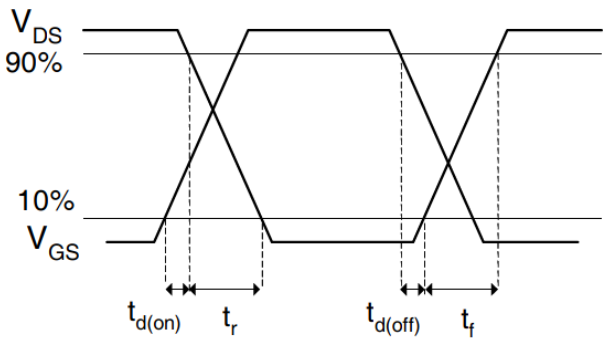


Fig 20b. Switching Time Waveforms

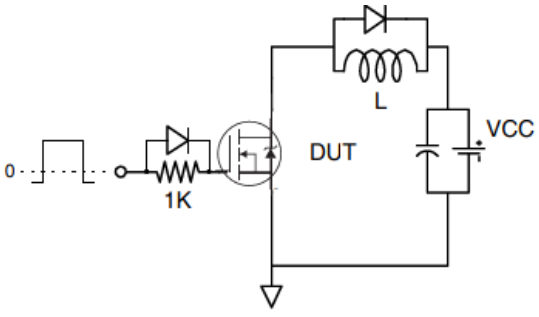


Fig 21a. Gate Charge Test Circuit

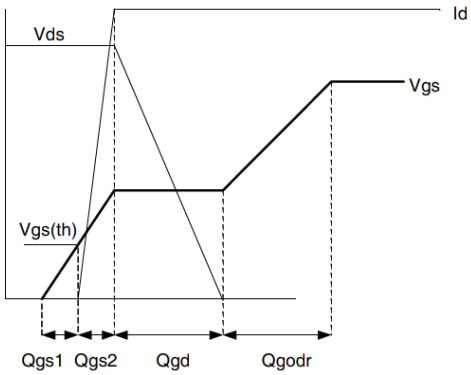


Fig 21b. Gate Charge Waveform

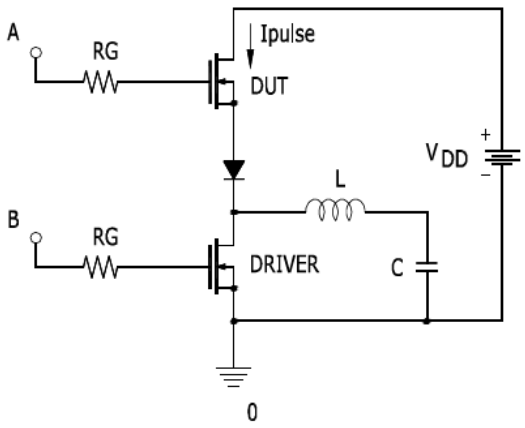


Fig 22a. t_{st} and E_{PULSE} Test Circuit

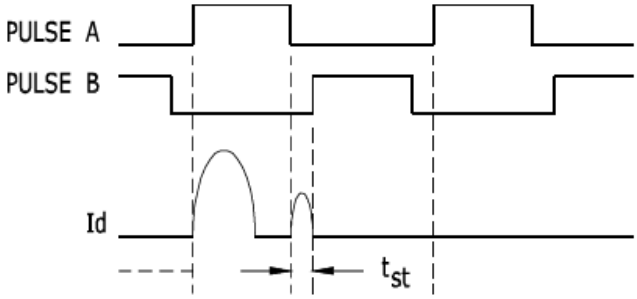


Fig 22b. t_{st} Test Waveforms

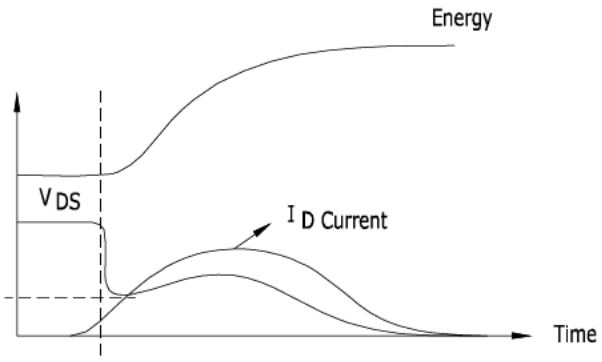
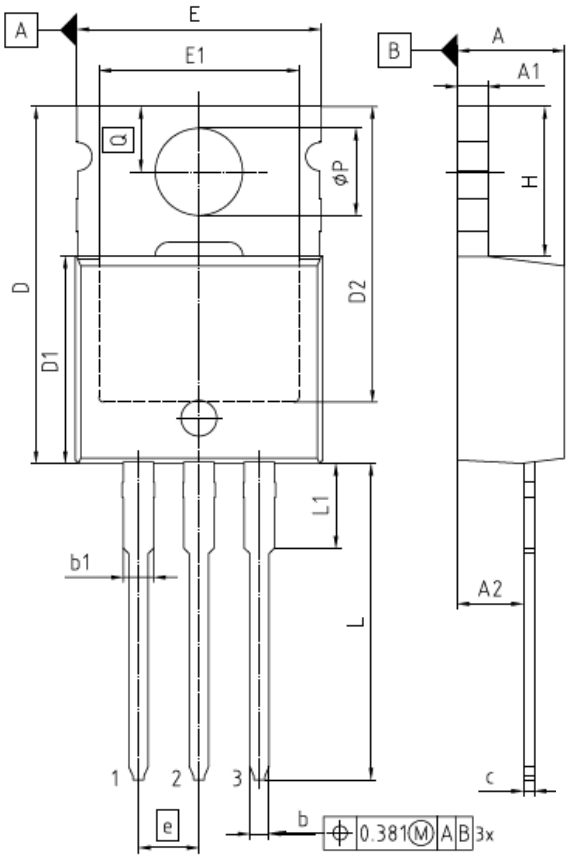


Fig 22c. E_{PULSE} Test Waveforms

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.
② Starting T_J = 25°C, L = 0.18mH, R_G = 25Ω, I_{AS} = 39A.
③ Pulse width ≤ 400µs; duty cycle ≤ 2%.
④ R_θ is measured at T_J approximately 90°C.
⑤ Half sine wave with duty cycle = 0.25, ton=1µsec.

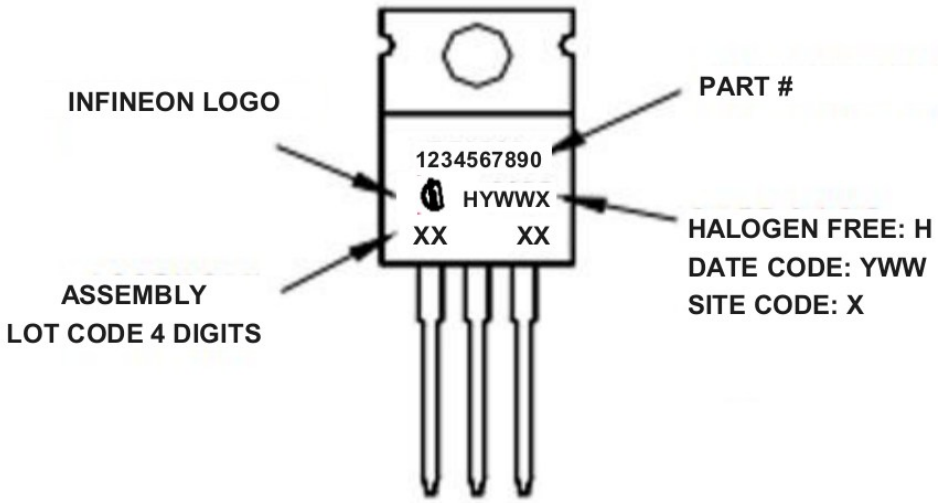
TO-220 Package Outline (Dimensions are shown in millimeters (inches))



NOTES:
DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURRS
GATE BURRS ARE LESS THAN 0.5 mm

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

TO-220 Part Marking Information



TO-220 packages are not recommended for Surface Mount Application.

Revision History

Date	Rev.	Comments
2026-08-03	2.1	• Update datasheet to Infineon format • Updated Package Outline and Part marking –page 8 • Added disclaimer on last page.

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