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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	100	—	—	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.12	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	53	62	mΩ	V_{GS} = 10V, I_D = 5.0A 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	—	—	20	µA	V_{DS} = 100V, V_{GS} = 0V
		—	—	250		V_{DS} = 80V, 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
$R_{G(int)}$	Internal Gate Resistance	—	1.9	2.9	Ω	

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
gfs	Forward Transconductance	6.6	—	—	S	V_{DS} = 10V, I_D = 5.0A
Q_g	Total Gate Charge	—	8.4	13	nC	V_{DS} = 50V
Q_{gs1}	Pre-Vth Gate-to-Source Charge	—	2.2	—		V_{GS} = 10V
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	0.64	—		I_D = 5.0A
Q_{gd}	Gate-to-Drain Charge	—	2.8	—		See Fig.6 and 16
Q_{godr}	Gate Charge Overdrive	—	2.8	—		
Q_{sw}	Switch Charge (Q_{gs2} + Q_{gd})	—	3.4	—		
$t_{d(on)}$	Turn-On Delay Time	—	7.4	—	ns	V_{DD} = 50V
t_r	Rise Time	—	2.8	—		I_D = 5.0A
$t_{d(off)}$	Turn-Off Delay Time	—	14	—		R_G = 6.0Ω
t_f	Fall Time	—	4.3	—		V_{GS} = 10V ④
C_{iss}	Input Capacitance	—	530	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	110	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	29	—		f = 1.0MHz
C_{oss}	Output Capacitance	—	510	—		V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz
C_{oss}	Output Capacitance	—	67	—		V_{GS} = 0V, V_{DS} = 80V, f = 1.0MHz
C_{oss} eff.	Effective Output Capacitance	—	130	—		V_{GS} = 0V, V_{DS} = 0V to 80V ⑤

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	—	11	mJ
I_{AR}	Avalanche Current ①	—	5.0	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	38	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	34		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J = 25°C, I_S = 5.0A, V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	—	31	—	ns	T_J = 25°C, I_F = 5.0A, V_{DD} = 25V
Q_{rr}	Reverse Recovery Charge	—	37	—	nC	di/dt = 100A/µs ④

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② Starting T_J = 25°C, L = 0.89mH, R_G = 25Ω, I_{AS} = 5.0A.

③ Surface mounted on 1 in. square Cu board.

④ Pulse width ≤ 400µs; duty cycle ≤ 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 Used double sided cooling , mounting pad.

⑦ Mounted on minimum footprint full size board with metalized back and with small clip heatsink.

⑧ T_C measured with thermal couple mounted to top (Drain) of part.

⑨ R_θ is measured at T_J of approximately 90°C.

⑩ Based on testing done using a typical device & evaluation board at Vbus=±45V, f_{SW}=400KHz, and T_A=25°C. The delta case temperature ΔT_C is 55°C.

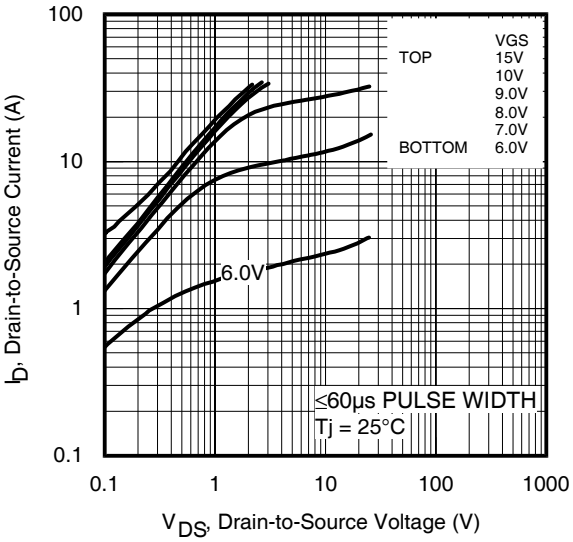


Fig 1. Typical Output Characteristics

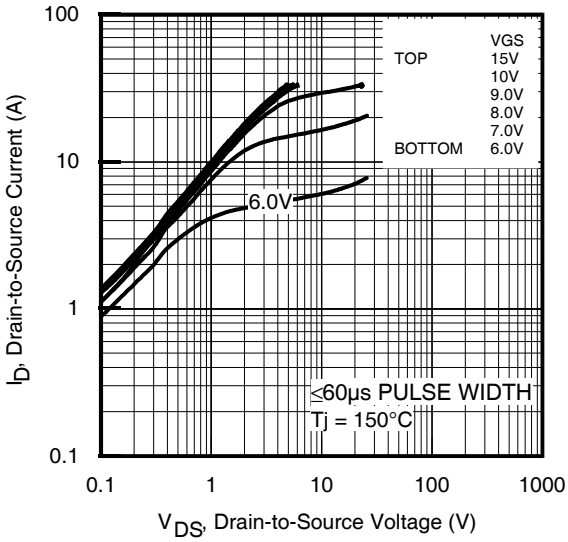


Fig 2. Typical Output Characteristics

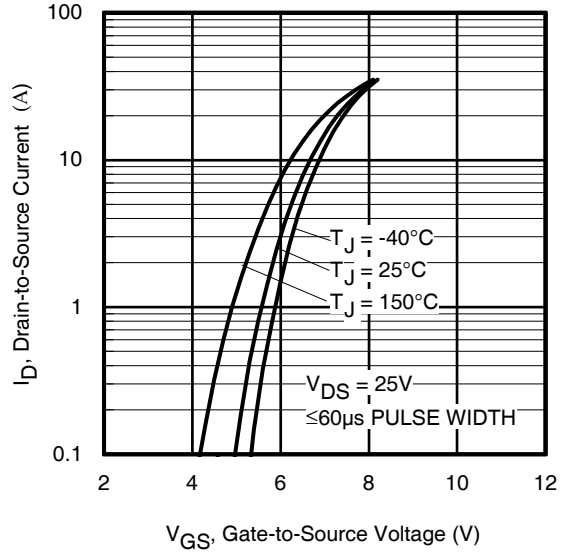


Fig 3. Typical Transfer Characteristics

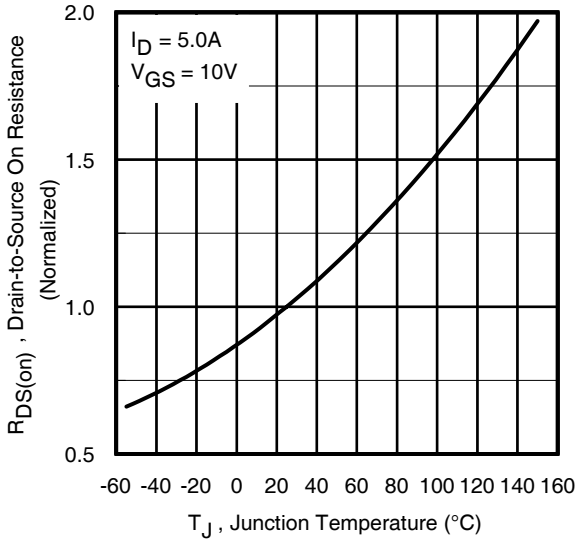


Fig 4. Normalized On-Resistance vs. Temperature

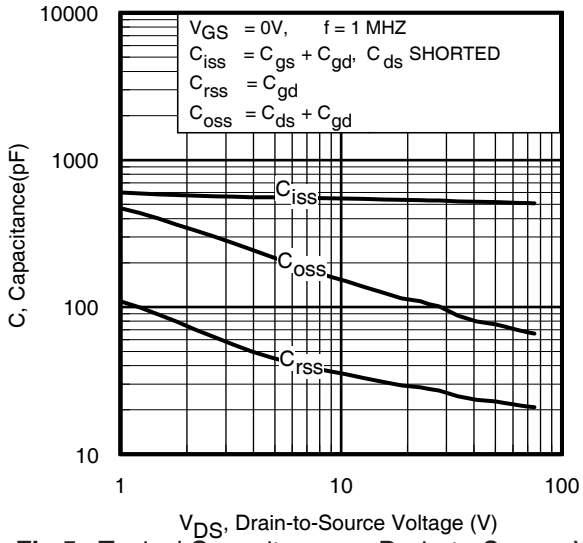


Fig 5. Typical Capacitance vs.Drain-to-Source Voltage

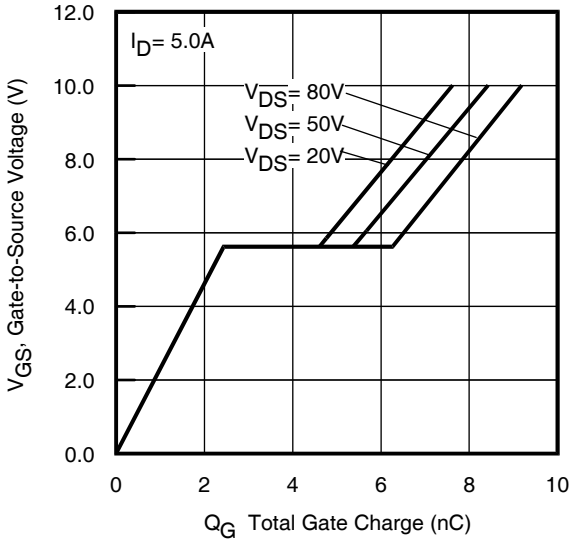


Fig 6. Typical Gate Charge vs.Gate-to-Source Voltage

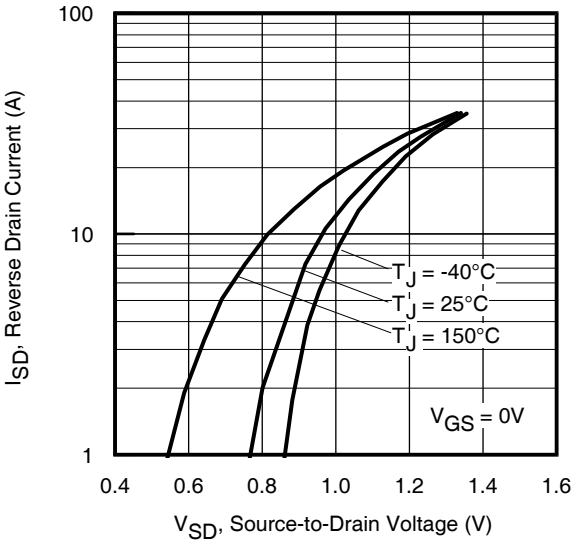


Fig 7. Typical Source-Drain Diode Forward Voltage

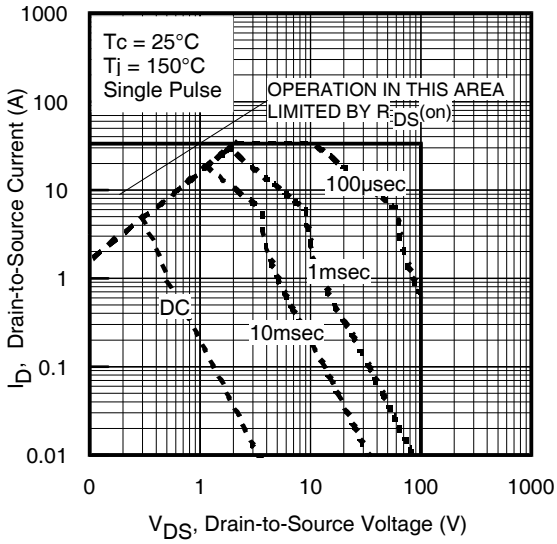


Fig 8. Maximum Safe Operating Area

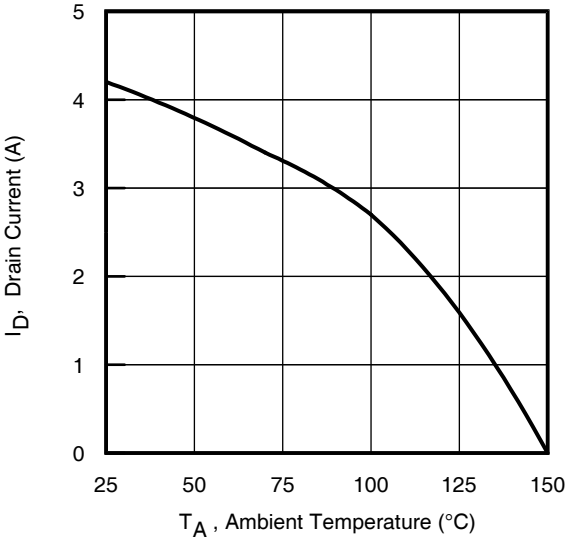


Fig 9. Maximum Drain Current vs. Ambient Temperature

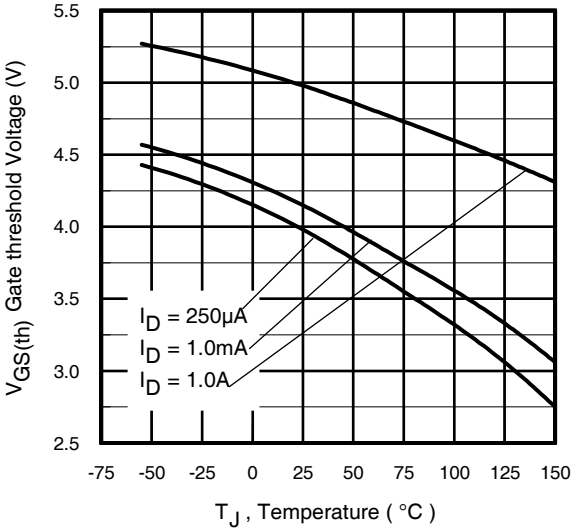


Fig 10. Threshold Voltage vs. Temperature

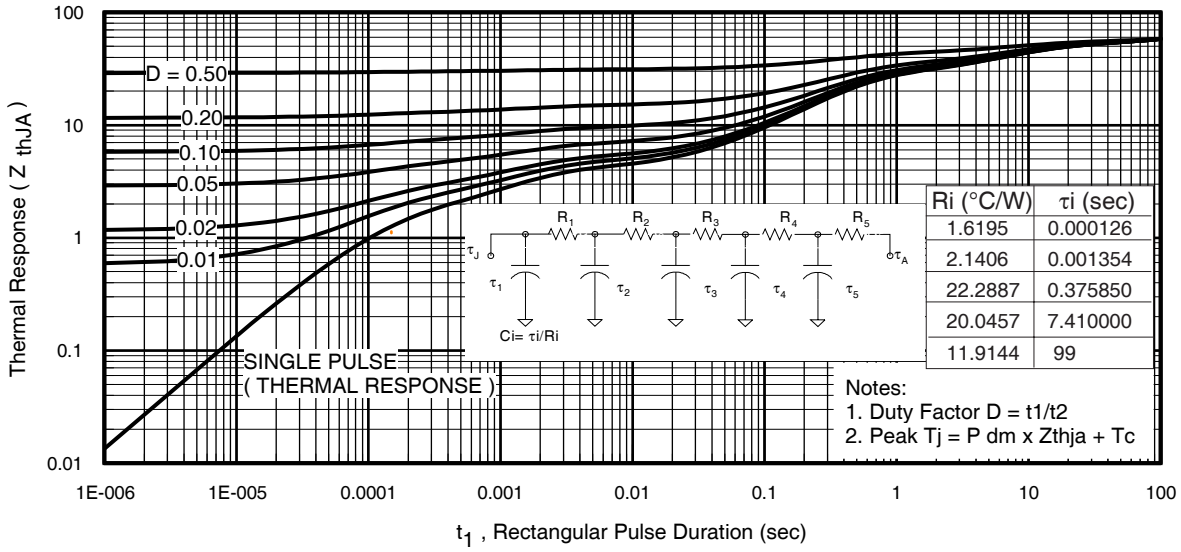


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient ③

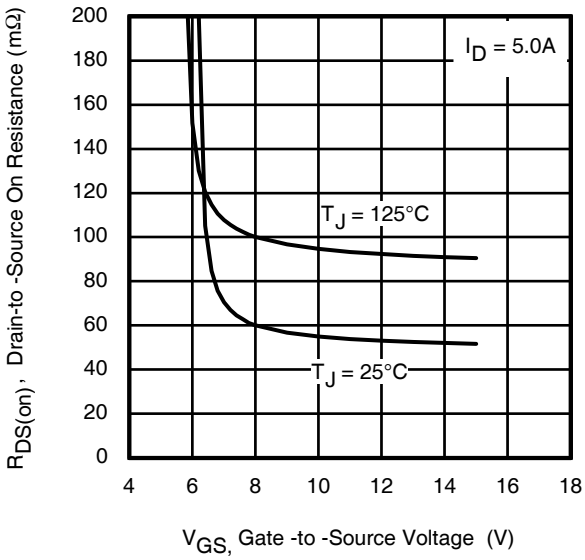


Fig 12. On-Resistance vs. Gate Voltage

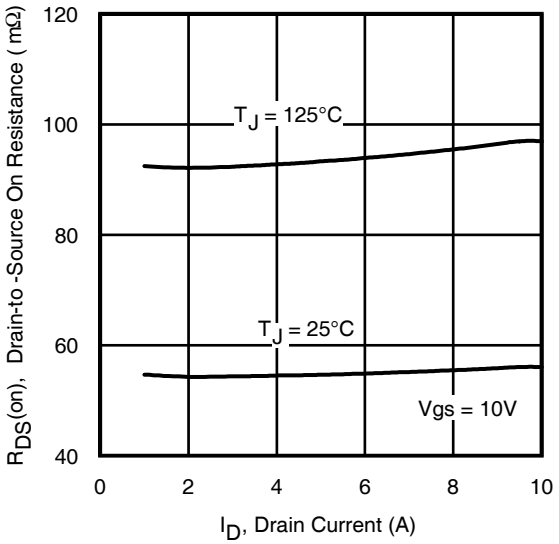


Fig 13. On-Resistance vs. Drain Current

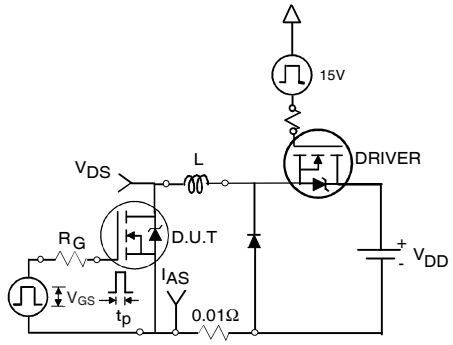


Fig 15a. Unclamped Inductive Test Circuit

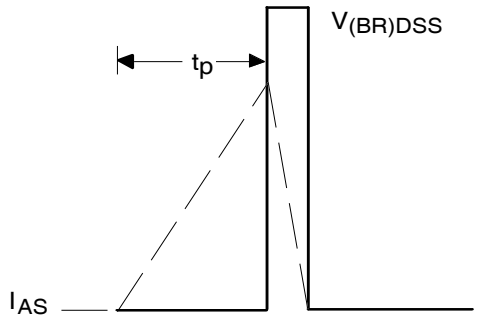


Fig 15b. Unclamped Inductive Waveforms

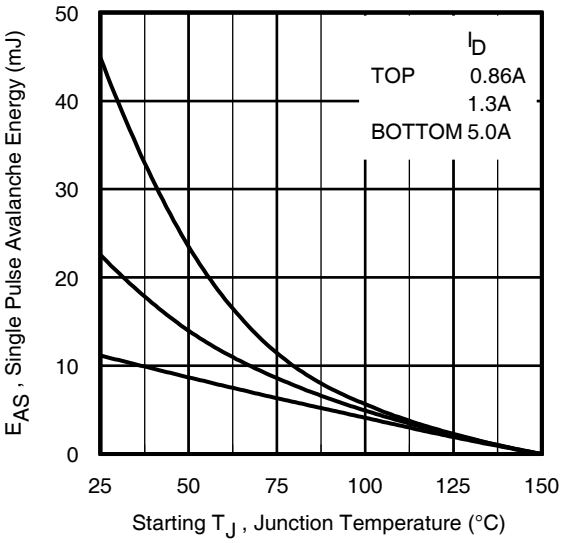


Fig 14. Maximum Avalanche Energy vs. Drain Current

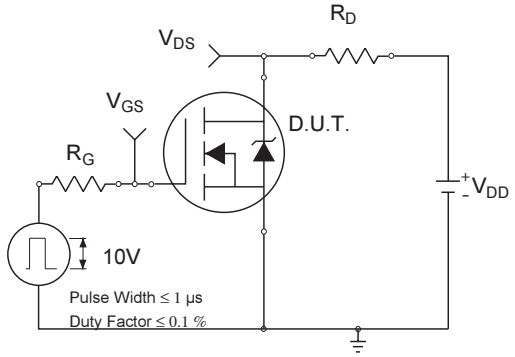


Fig 16a. Switching Time Test Circuit

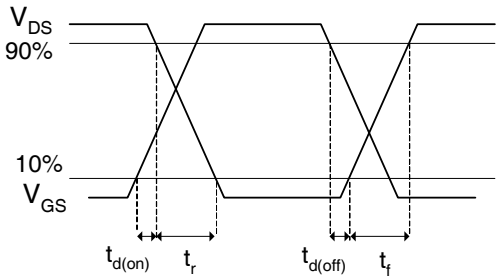


Fig 16b. Switching Time Waveforms

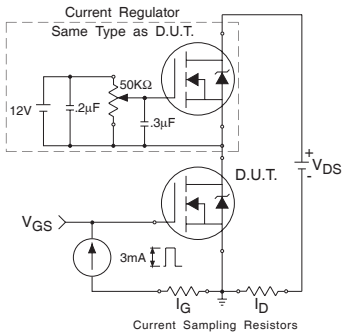


Fig 17a. Gate Charge Test Circuit

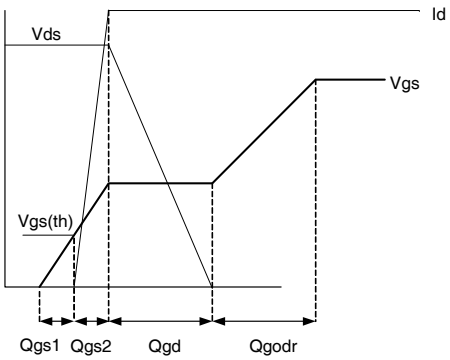
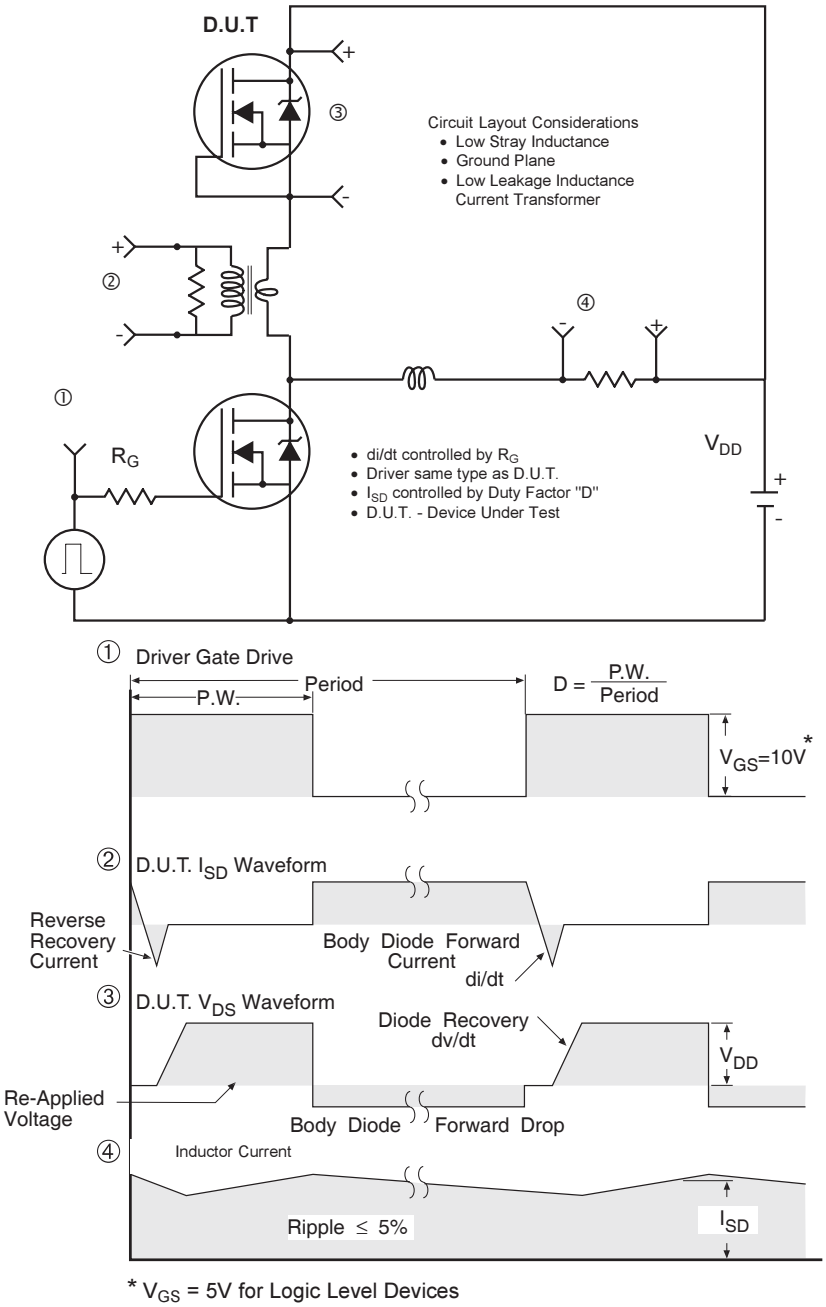


Fig 17b. Gate Charge Waveform

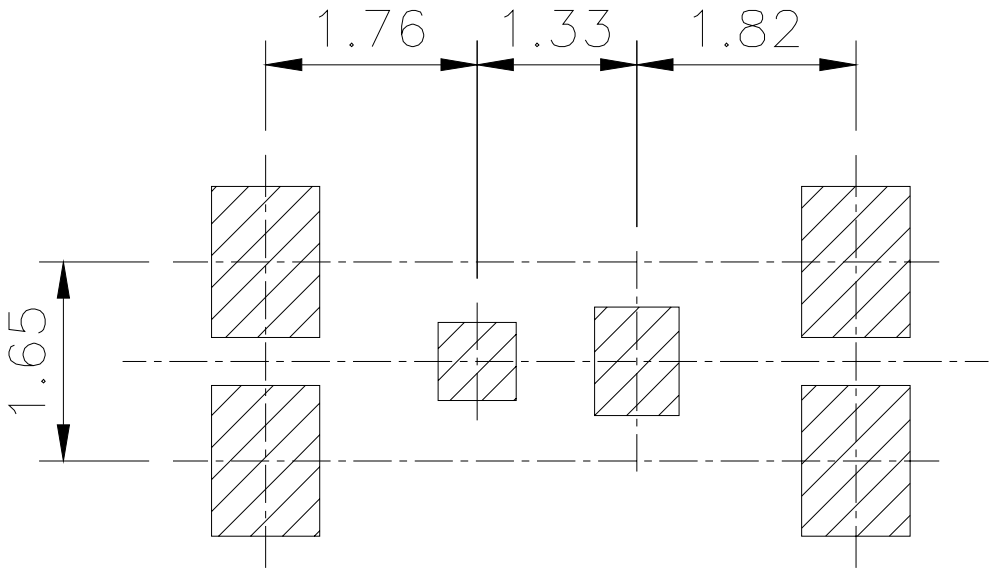


* V_{GS} = 5V for Logic Level Devices

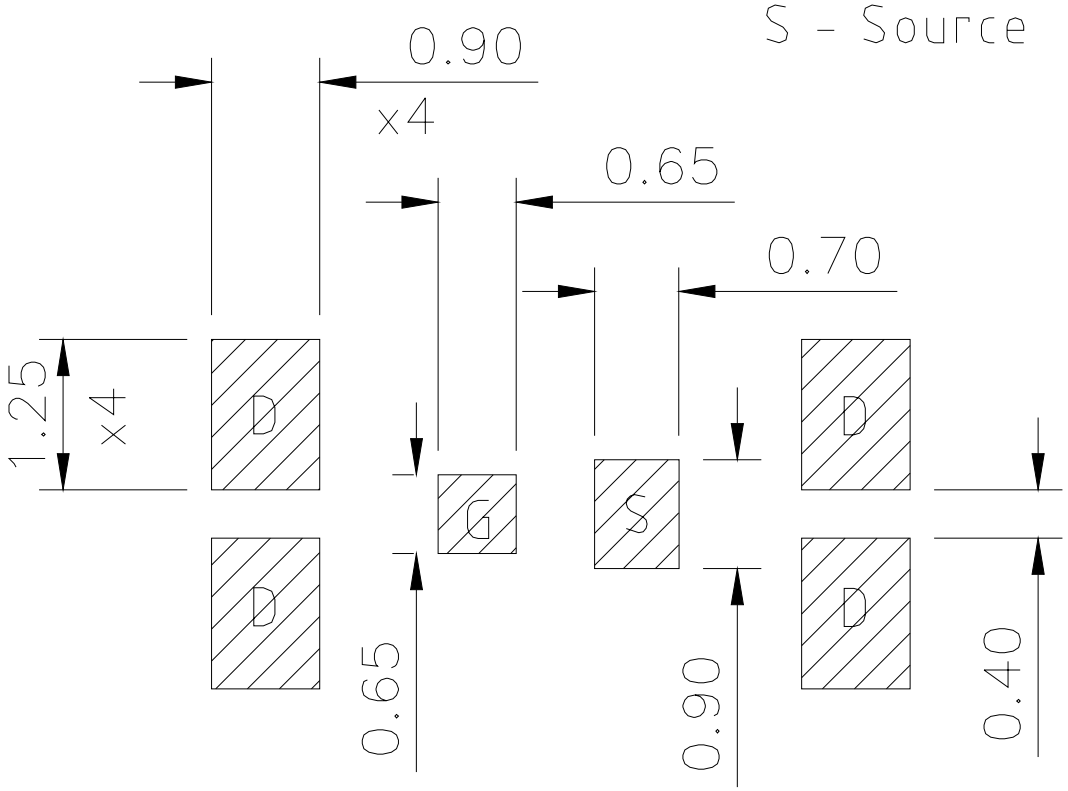
Fig 18. Diode Reverse Recovery Test Circuit for N-Channel HEXFET® Power MOSFETs

DirectFET™ Substrate and PCB Layout, SH Outline (Small Size Can, H-Designation).

Please see DirectFET application note AN-1035 for all details regarding PCB assembly using DirectFET. This includes all recommendations for stencil and substrate designs.

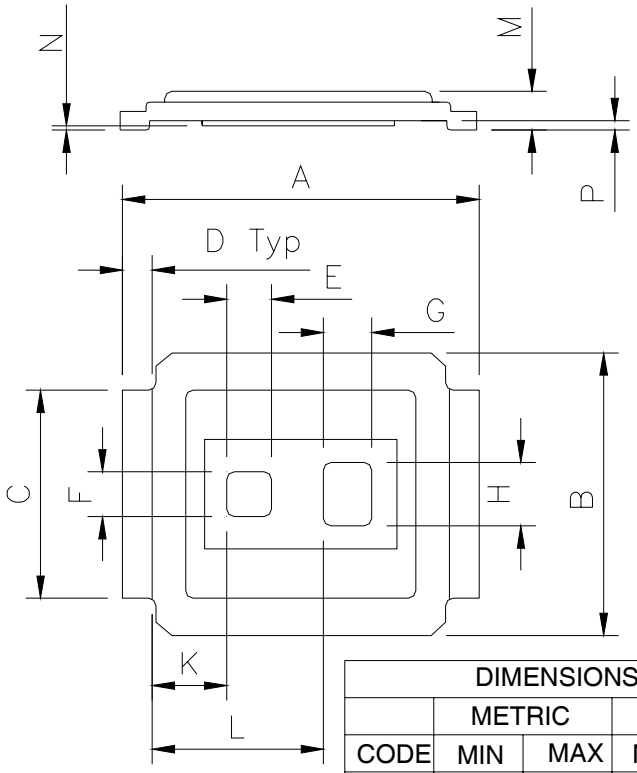


D - Drain
G - Gate
S - Source



DirectFET™ Outline Dimension, SH Outline (Small Size Can, H-Designation).

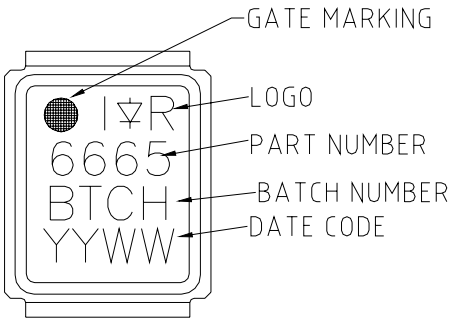
Please see DirectFET application note AN-1035 for all details regarding PCB assembly using DirectFET. This includes all recommendations for stencil and substrate designs.



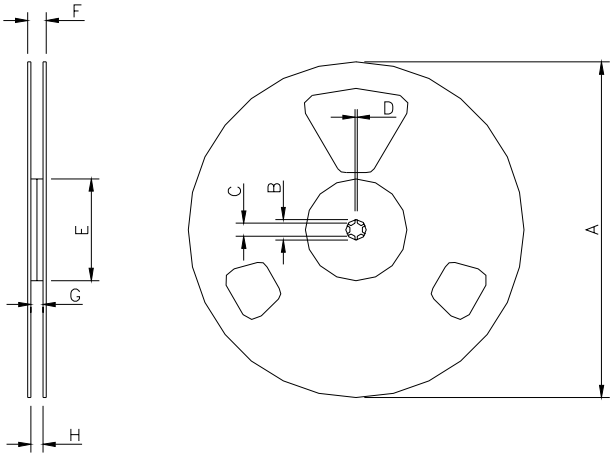
Note: Controlling dimensions are in mm.

DIMENSIONS				
	METRIC		IMPERIAL	
CODE	MIN	MAX	MIN	MAX
A	4.75	4.85	0.187	0.191
B	3.70	3.95	0.146	0.156
C	2.75	2.85	0.108	0.112
D	0.35	0.45	0.014	0.018
E	0.58	0.62	0.023	0.024
F	0.58	0.62	0.023	0.024
G	0.63	0.67	0.025	0.026
H	0.83	0.87	0.033	0.034
K	0.99	1.03	0.039	0.041
L	2.29	2.33	0.090	0.092
M	0.59	0.70	0.023	0.028
N	0.03	0.08	0.001	0.003
P	0.08	0.17	0.003	0.007

DirectFET™ Part Marking



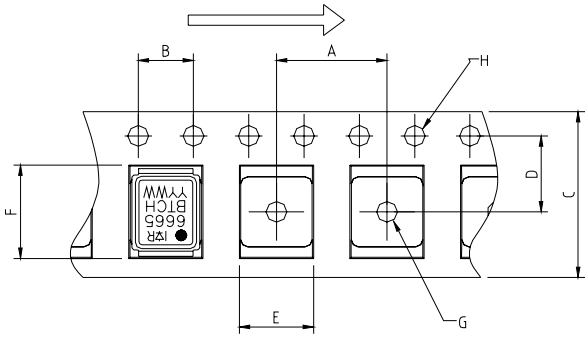
DirectFET™ Tape & Reel Dimension (Showing component orientation).



NOTE: Controlling dimensions in mm
Std reel quantity is 4800 parts. (ordered as IRF6665). For 1000 parts on 7" reel, order IRF6665TR1

REEL DIMENSIONS								
STANDARD OPTION **(QTY 4800)**					TR1 OPTION **(QTY 1000)**			
	METRIC		IMPERIAL		METRIC		IMPERIAL	
CODE	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A	330.0	N.C	12.992	N.C	177.77	N.C	6.9	N.C
B	20.2	N.C	0.795	N.C	19.06	N.C	0.75	N.C
C	12.8	13.2	0.504	0.520	13.5	12.8	0.53	0.50
D	1.5	N.C	0.059	N.C	1.5	N.C	0.059	N.C
E	100.0	N.C	3.937	N.C	58.72	N.C	2.31	N.C
F	N.C	18.4	N.C	0.724	N.C	13.50	N.C	0.53
G	12.4	14.4	0.488	0.567	11.9	12.01	0.47	N.C
H	11.9	15.4	0.469	0.606	11.9	12.01	0.47	N.C

Loaded Tape Feed Direction



NOTE: CONTROLLING DIMENSIONS IN MM

DIMENSIONS				
	METRIC		IMPERIAL	
CODE	MIN	MAX	MIN	MAX
A	7.90	8.10	0.311	0.319
B	3.90	4.10	0.154	0.161
C	11.90	12.30	0.469	0.484
D	5.45	5.55	0.215	0.219
E	4.00	4.20	0.158	0.165
F	5.00	5.20	0.197	0.205
G	1.50	N.C	0.059	N.C
H	1.50	1.60	0.059	0.063

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7903
Visit us at www.irf.com for sales contact information.11/05

Note: For the most current drawings please refer to the IR website at:
http://www.irf.com/package/