

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	23	—	mV/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	1.7	2.2	m Ω	$V_{GS} = 10V, I_D = 30A$ ③
		—	—	3.4		$V_{GS} = 4.5V, I_D = 24A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	1.35	1.64	2.35	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Coefficient	—	-5.7	—	mV/ $^\circ\text{C}$	
I_{DSS}	Drain-to-Source Leakage Current	—	—	5.0	μA	$V_{DS} = 30V, V_{GS} = 0V$
		—	—	1.0		$V_{DS} = 24V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 150^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	100	—	—	S	$V_{DS} = 15V, I_D = 24A$
Q_g	Total Gate Charge	—	43	65	nC	$V_{DS} = 15V$ $V_{GS} = 4.5V$ $I_D = 24A$ See Fig. 16
Q_{gs1}	Pre-V _{th} Gate-to-Source Charge	—	12	—		
Q_{gs2}	Post-V _{th} Gate-to-Source Charge	—	4.0	—		
Q_{gd}	Gate-to-Drain Charge	—	15	23		
Q_{godr}	Gate Charge Overdrive	—	12	—		
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)	—	19	—	nC	$V_{DS} = 15V, V_{GS} = 0V$
Q_{oss}	Output Charge	—	28	—		
R_G	Gate Resistance	—	1.0	2.2	Ω	
$t_{d(on)}$	Turn-On Delay Time	—	21	—	ns	$V_{DD} = 15V, V_{GS} = 4.5V$ ③ $I_D = 24A$ Clamped Inductive Load
t_r	Rise Time	—	71	—		
$t_{d(off)}$	Turn-Off Delay Time	—	27	—		
t_f	Fall Time	—	8.1	—		
C_{iss}	Input Capacitance	—	5640	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	1260	—		$V_{DS} = 15V$
C_{rss}	Reverse Transfer Capacitance	—	570	—		$f = 1.0\text{MHz}$

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	89	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	240		
V_{SD}	Diode Forward Voltage	—	0.78	1.2	V	$T_J = 25^\circ\text{C}, I_S = 24A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	43	65	ns	$T_J = 25^\circ\text{C}, I_F = 24A$
Q_{rr}	Reverse Recovery Charge	—	46	69	nC	$di/dt = 100A/\mu s$ ③

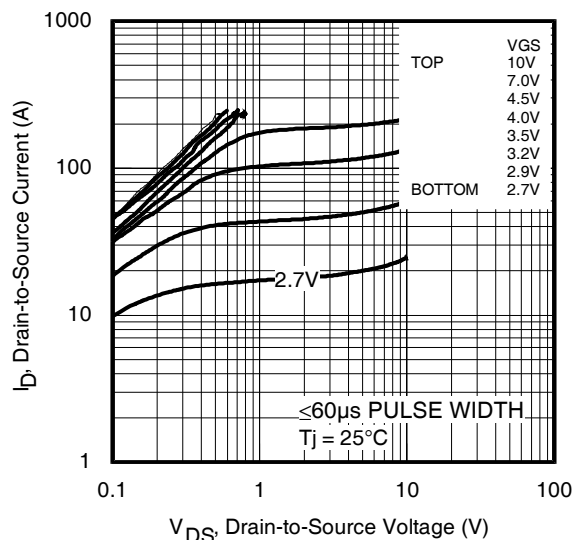


Fig 1. Typical Output Characteristics

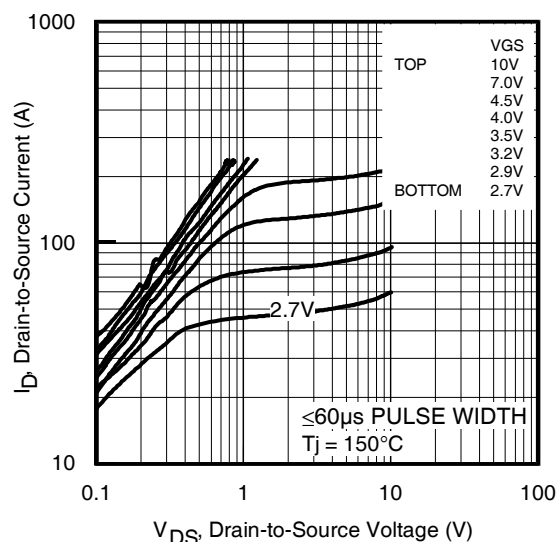


Fig 2. Typical Output Characteristics

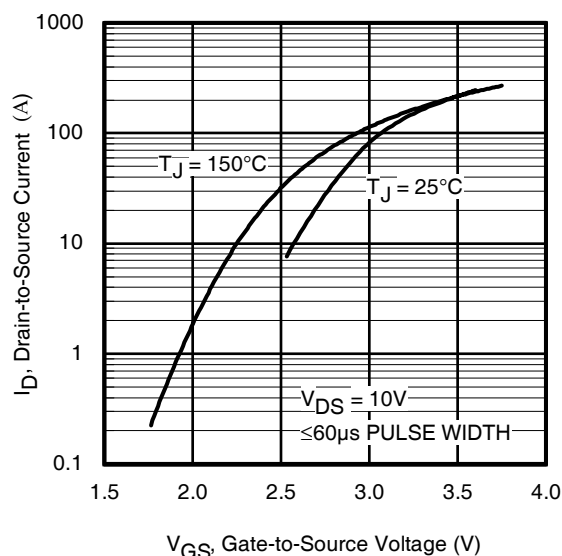


Fig 3. Typical Transfer Characteristics

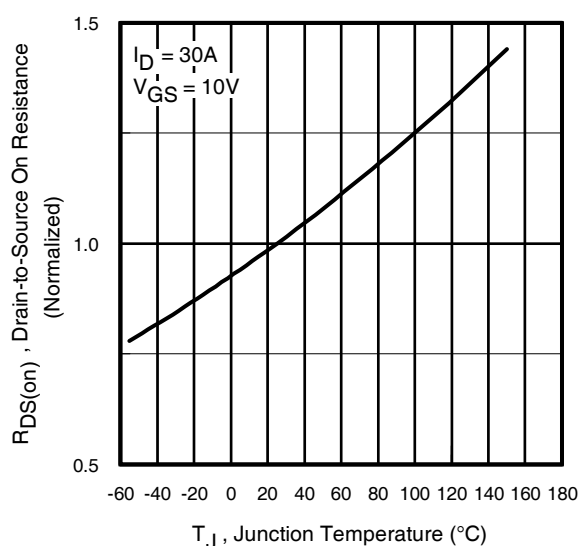


Fig 4. Normalized On-Resistance vs. Temperature

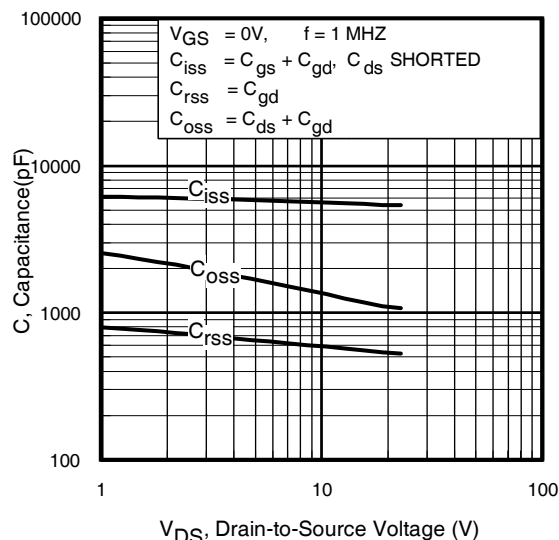


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

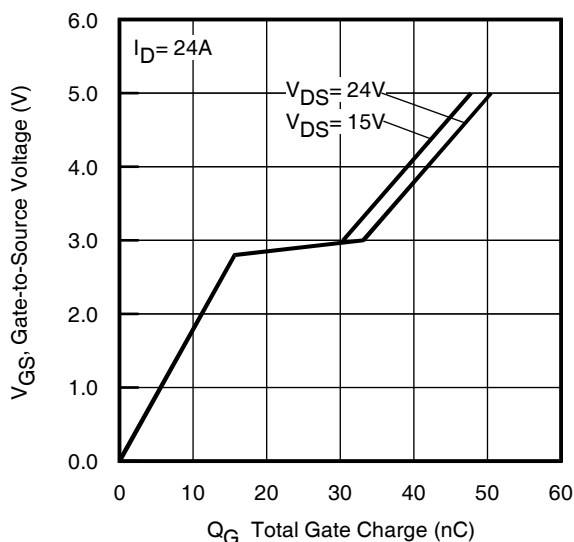
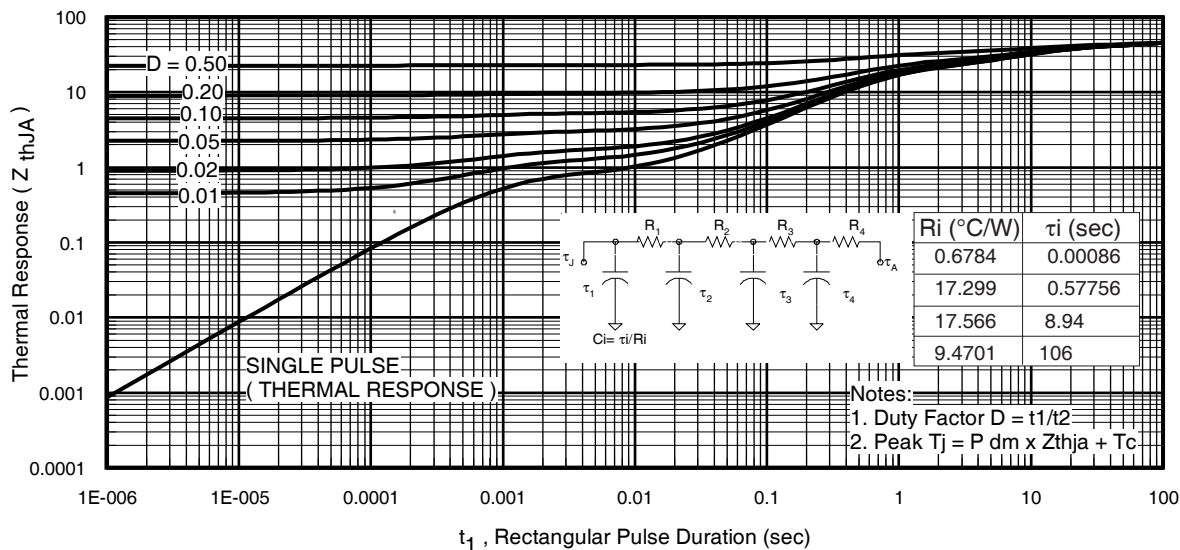
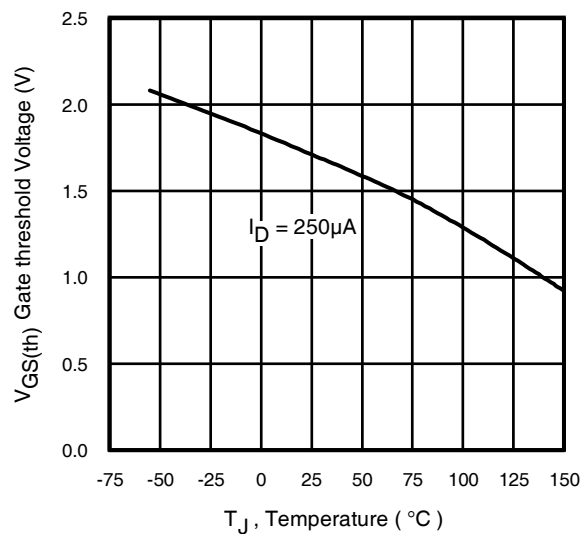
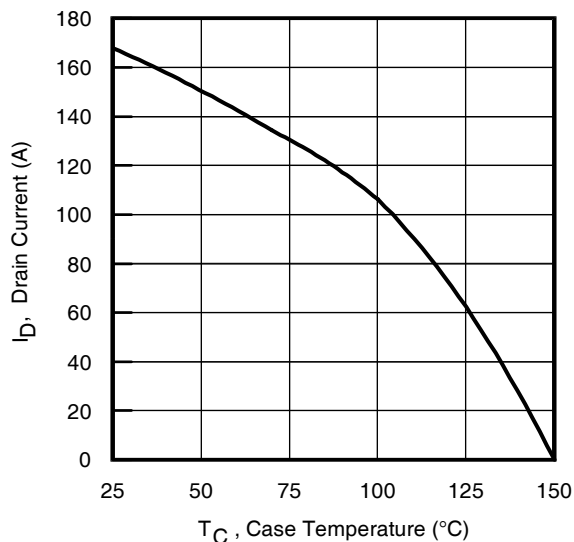
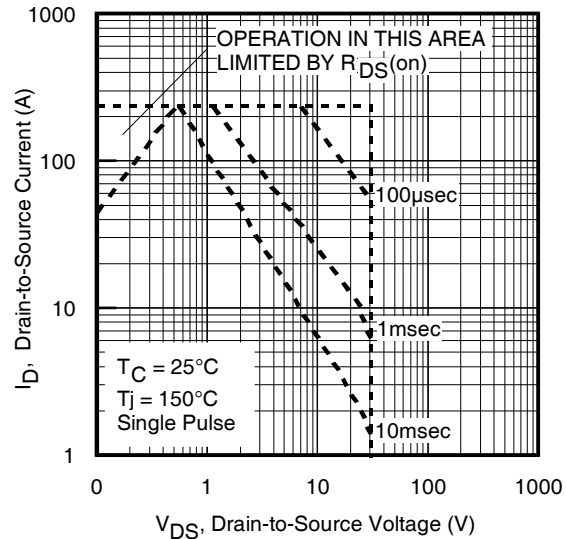
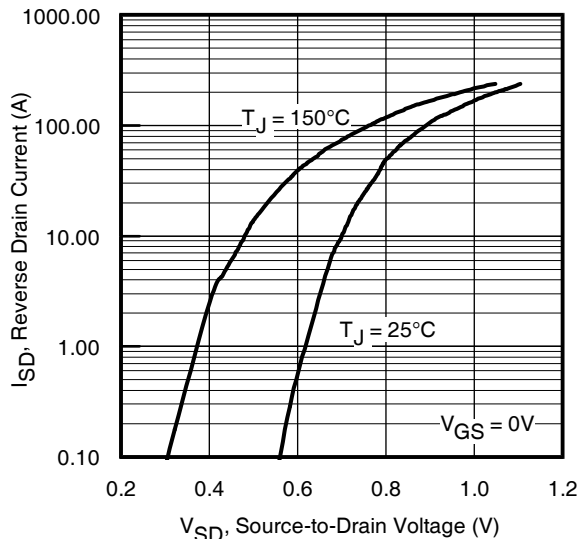


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage



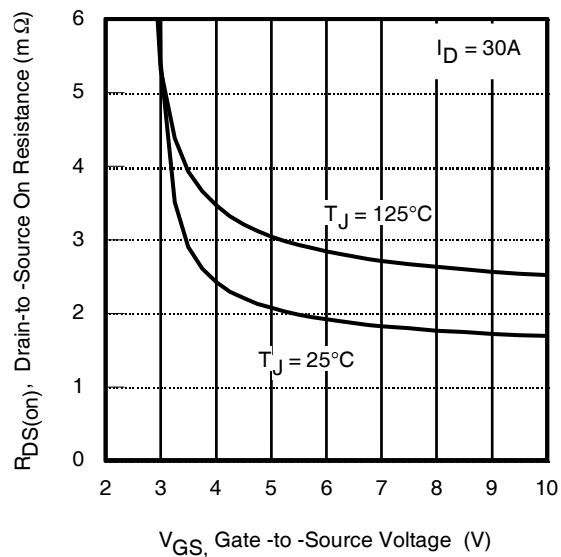


Fig 12. On-Resistance vs. Gate Voltage

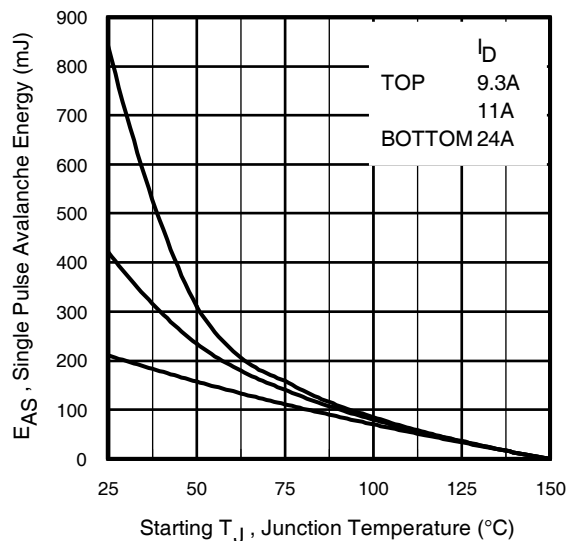


Fig 13. Maximum Avalanche Energy vs. Drain Current

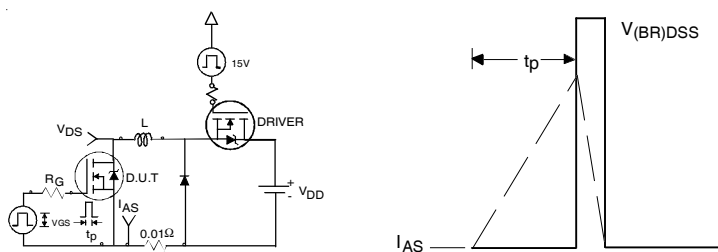


Fig 14. Unclamped Inductive Test Circuit and Waveform

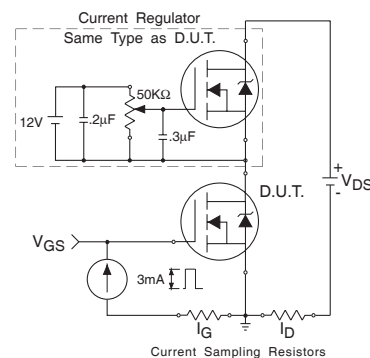


Fig 15. Gate Charge Test Circuit

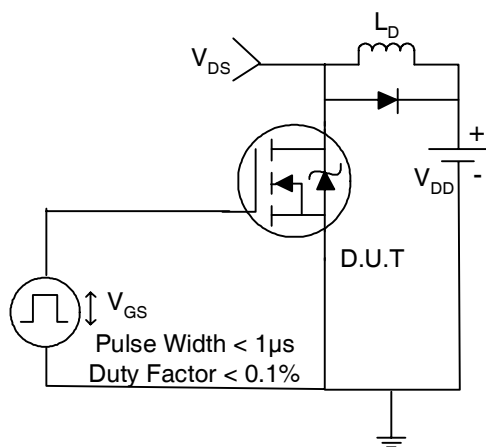


Fig 16. Switching Time Test Circuit

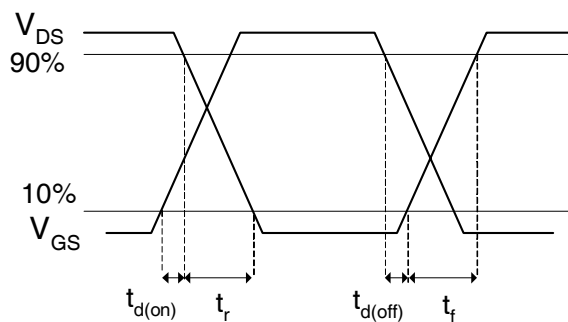


Fig 17. Switching Time Waveforms

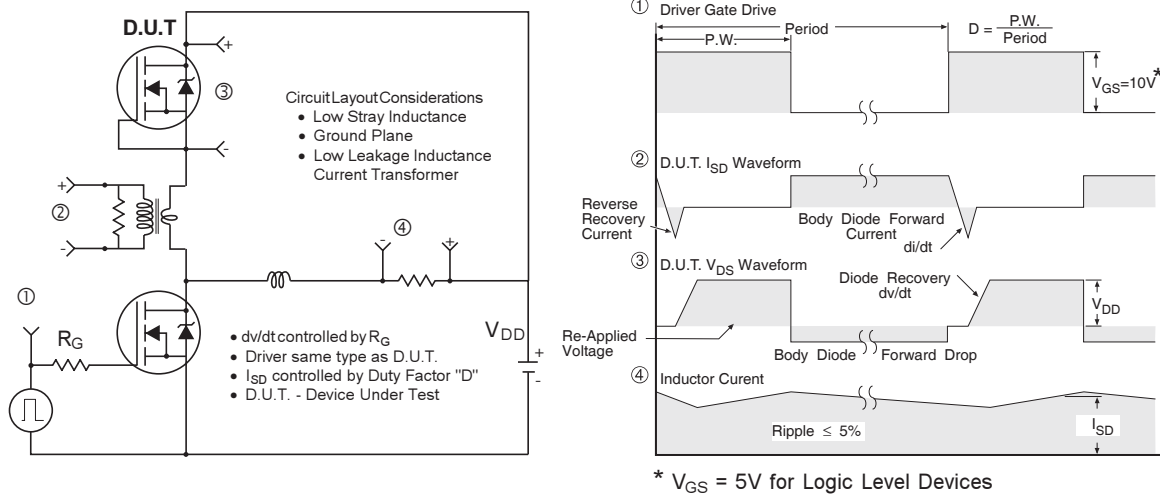


Fig 18. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

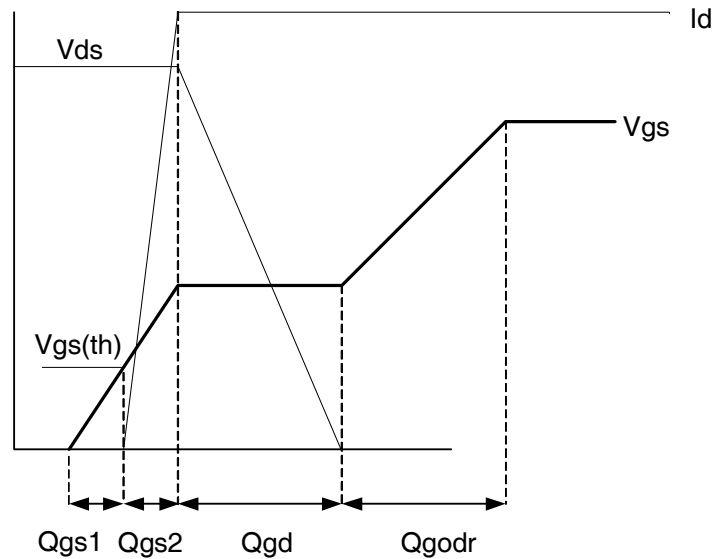
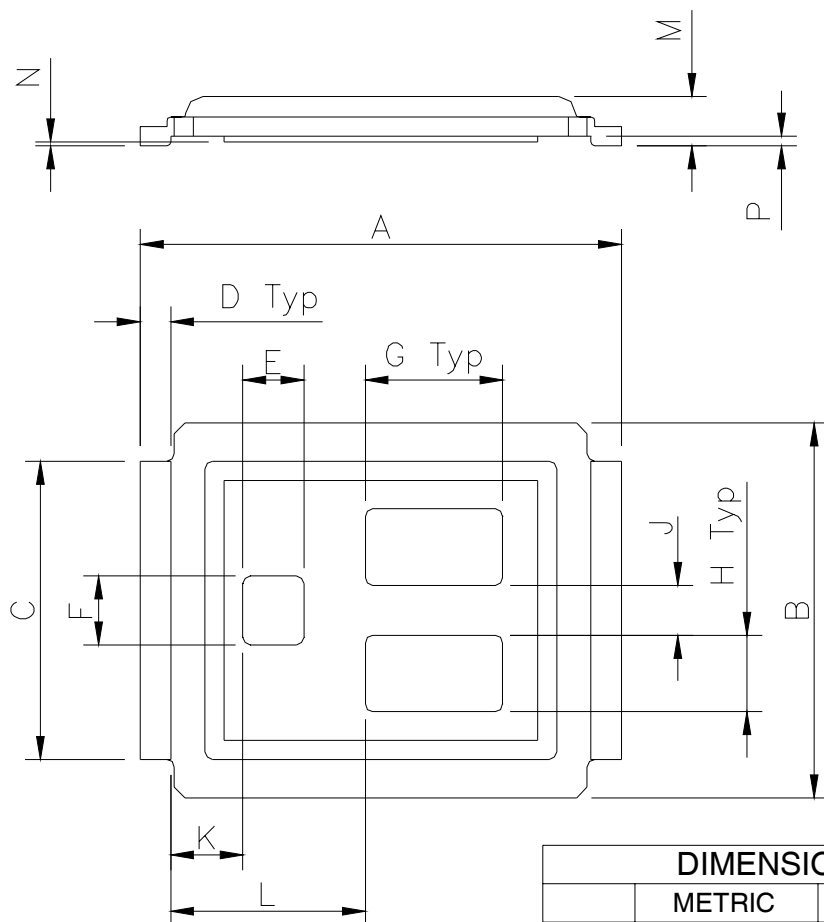


Fig 19. Gate Charge Waveform

DirectFET™ Outline Dimension, MT Outline (Medium Size Can, T-Designation).

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



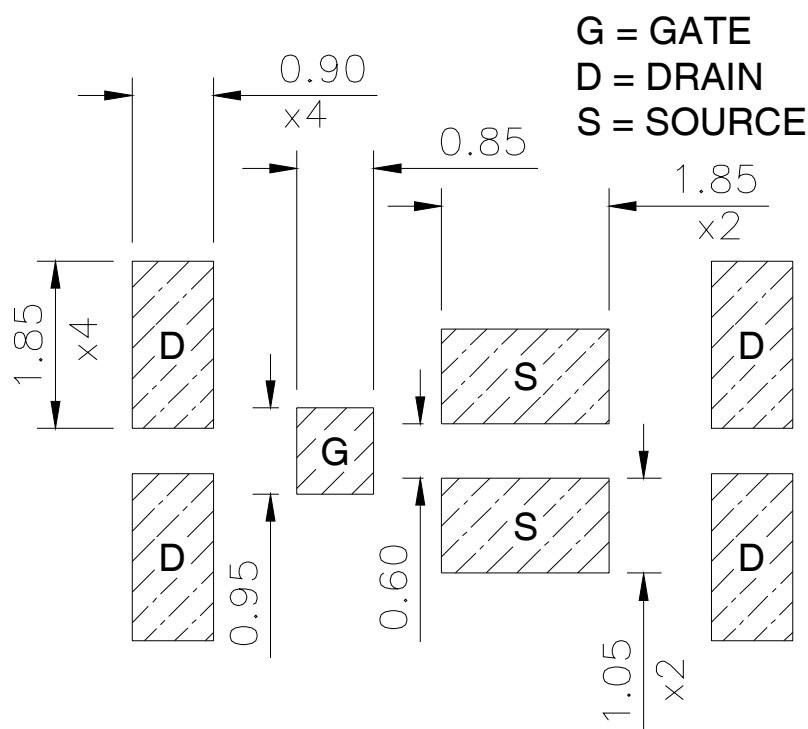
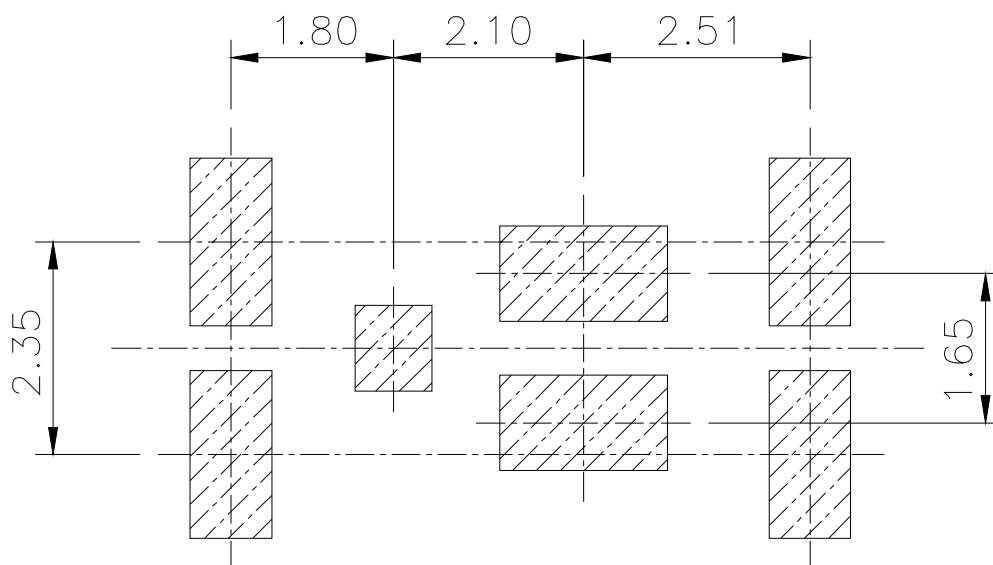
**NOTE: CONTROLLING
DIMENSIONS ARE IN MM**

DIMENSIONS				
	METRIC		IMPERIAL	
CODE	MIN	MAX	MIN	MAX
A	6.25	6.35	0.246	0.250
B	4.80	5.05	0.189	0.199
C	3.85	3.95	0.152	0.156
D	0.35	0.45	0.014	0.018
E	0.78	0.82	0.031	0.032
F	0.88	0.92	0.035	0.036
G	1.78	1.82	0.070	0.072
H	0.98	1.02	0.039	0.040
J	0.63	0.67	0.025	0.026
K	0.88	1.01	0.035	0.039
L	2.46	2.63	0.097	0.104
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

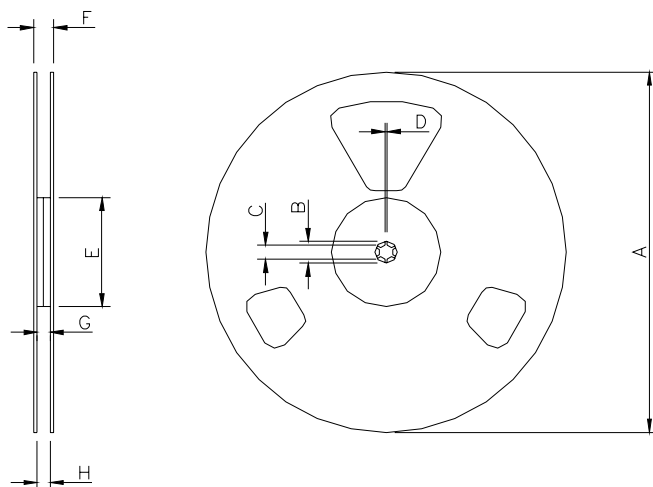
DirectFET™ Board Footprint, MT Outline (Medium Size Can, T-Designation).

Please see DirectFET application note AN-1035 for all details regarding the assembly of DirectFET.

This includes all recommendations for stencil and substrate designs.



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

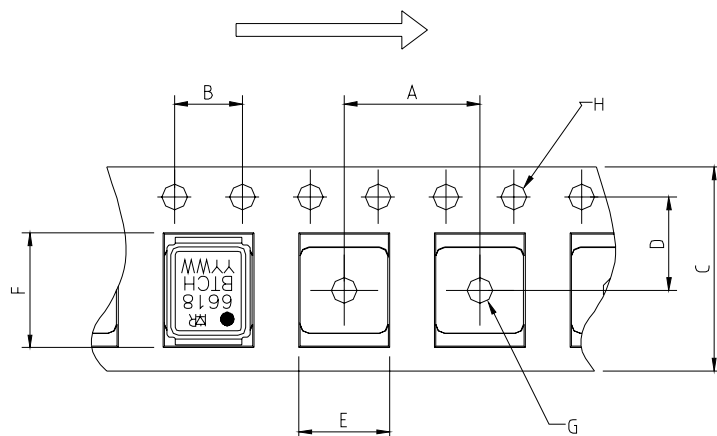


NOTE: Controlling dimensions in mm

Std reel quantity is 4800 parts. (ordered as IRF6618). For 1000 parts on 7" reel, order IRF6618TR1

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

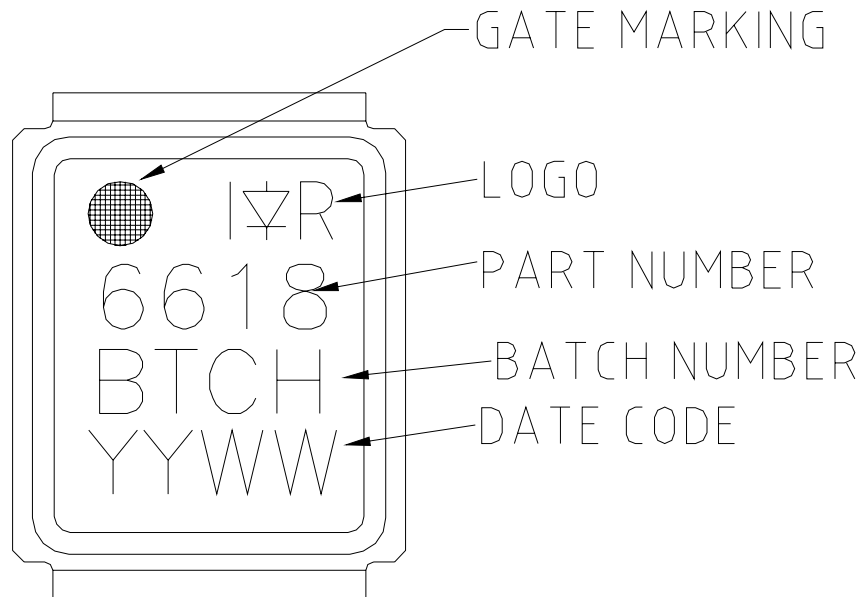
LOADED TAPE FEED DIRECTION



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	5.10	5.30	0.201	0.209
F	6.50	6.70	0.256	0.264
G	1.50	N.C	0.059	N.C
H	1.50	1.60	0.059	0.063

DirectFET™ Part Marking



Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 0.75\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 24\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ Surface mounted on 1 in. square Cu board.
- ⑤ Used double sided cooling , mounting pad.
- ⑥ Mounted on minimum footprint full size board with metalized back and with small clip heatsink.
- ⑦ T_C measured with thermal couple mounted to top (Drain) of part.
- ⑧ R_θ is measured at T_J of approximately 90°C .

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
IR Rectifier

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TAC Fax: (310) 252-7903

Visit us at www.irf.com for sales contact information.11/05

www.irf.com

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