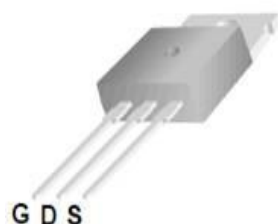


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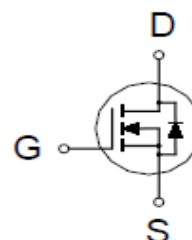
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
600V	$1.25\Omega @ V_{GS} = 10V$	6A



TO-220



100% UIS tested

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current ²	$T_C = 25\text{ }^\circ\text{C}$	I_D	6	A
	$T_C = 100\text{ }^\circ\text{C}$		4.3	
Pulsed Drain Current ^{1,2}		I_{DM}	20	
Avalanche Energy ³		E_{AS}	45	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	113	W
	$T_C = 100\text{ }^\circ\text{C}$		45.4	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.1	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse width limited by maximum junction temperature.

²Limited only by maximum temperature allowed.

³ $V_{DD} = 50V$, $L = 10\text{mH}$, starting $T_J = 25^\circ\text{C}$.

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	600			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.5		4.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±30V			±250	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 600V, V _{GS} = 0V, T _C = 25 °C			25	μA
		V _{DS} = 600V, V _{GS} = 0V, T _C = 100 °C			250	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	20			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 3A		0.98	1.25	Ω
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 3A		8		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		1274		pF
Output Capacitance	C _{oss}			126		
Reverse Transfer Capacitance	C _{rss}			23		
Total Gate Charge ²	Q _g	V _{DD} = 300V, I _D = 6A, V _{GS} = 10V		28.9		nC
Gate-Source Charge ²	Q _{gs}			5.8		
Gate-Drain Charge ²	Q _{gd}			10		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 300V, I _D = 6A, R _G = 25Ω		47		nS
Rise Time ²	t _r			32		
Turn-Off Delay Time ²	t _{d(off)}			140		
Fall Time ²	t _f			55		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ³	I _S				6	A
Forward Voltage ¹	V _{SD}	I _F = 10A, V _{GS} = 0V			1.5	V
Reverse Recovery Time	t _{rr}	I _F = 6A, dl _F /dt = 100A / μS		560		nS
Reverse Recovery Charge	Q _{rr}			6		nC

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

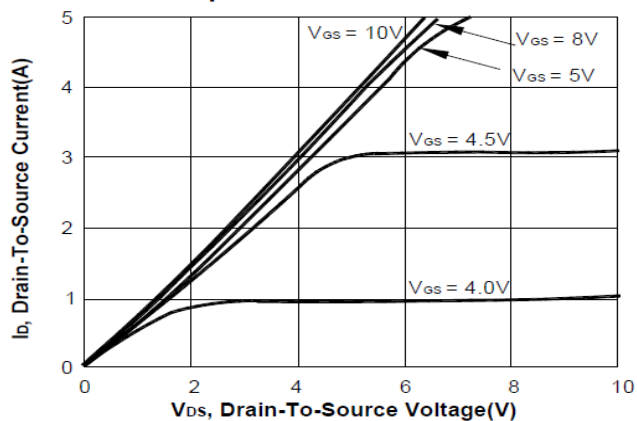
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

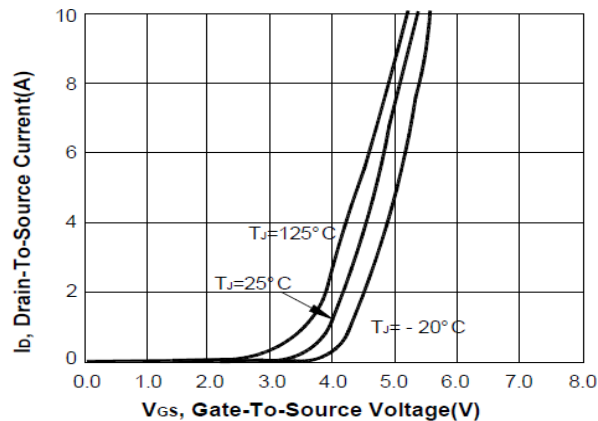
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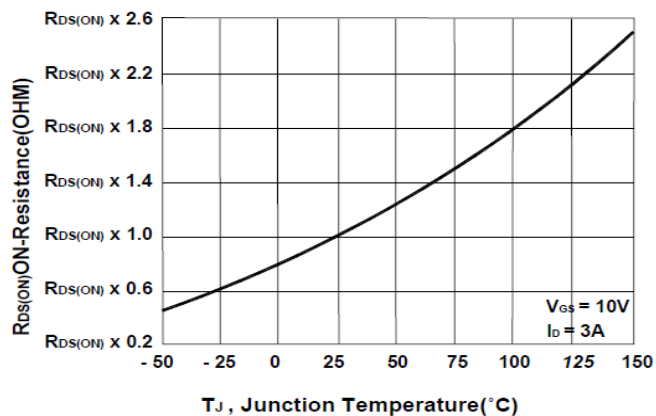
Output Characteristics



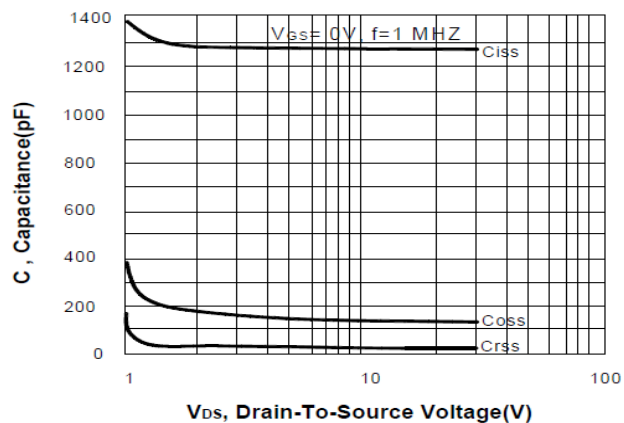
Transfer Characteristics



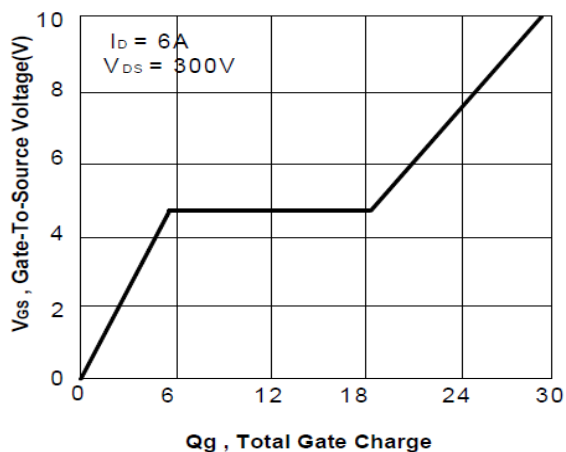
On-Resistance VS Temperature



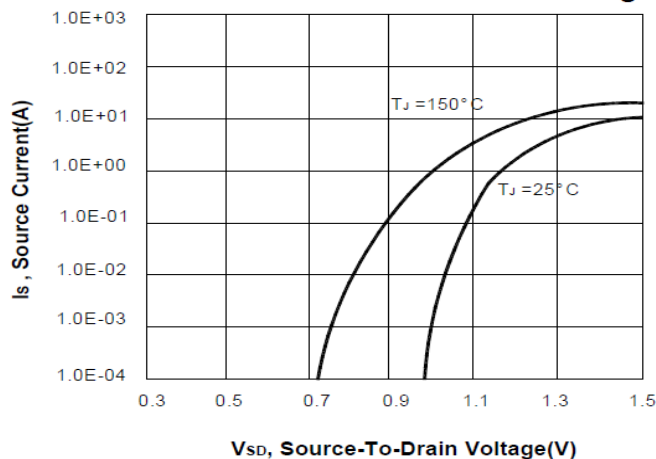
Capacitance Characteristic



Gate charge Characteristics



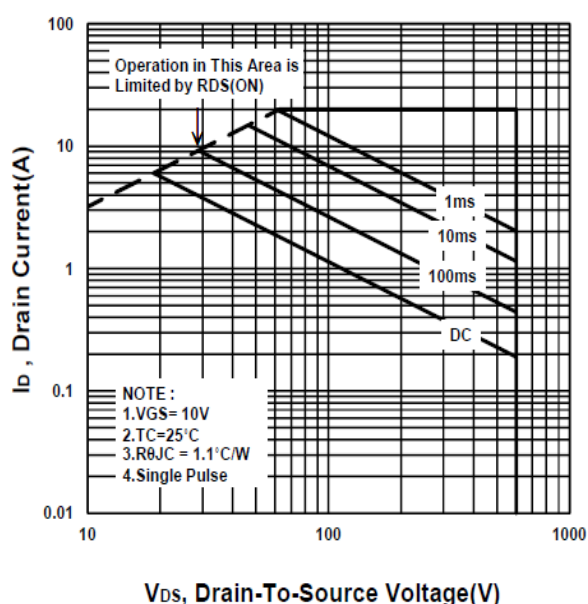
Source-Drain Diode Forward Voltage



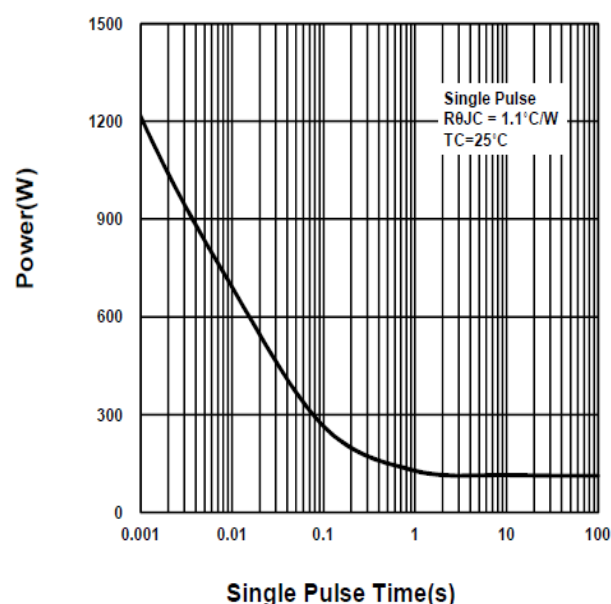
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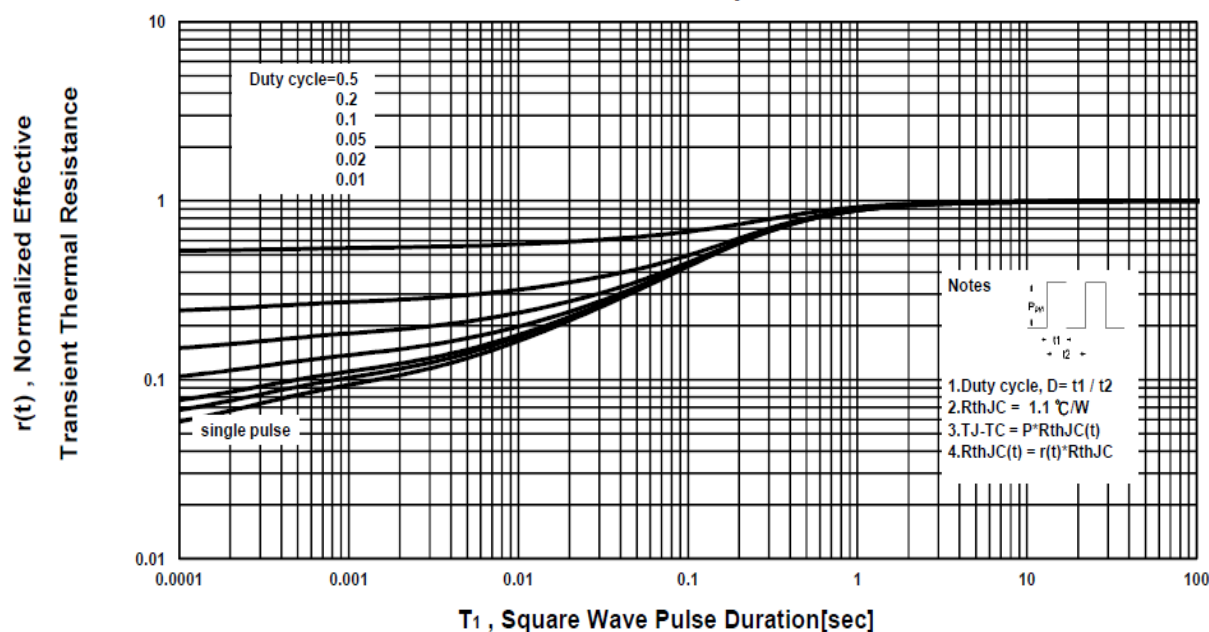
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Figure 1
Gate Charge Test Circuit

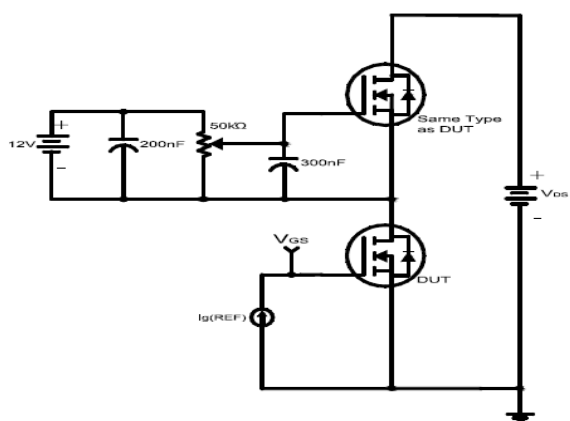


Figure 2
Gate Charge Waveforms

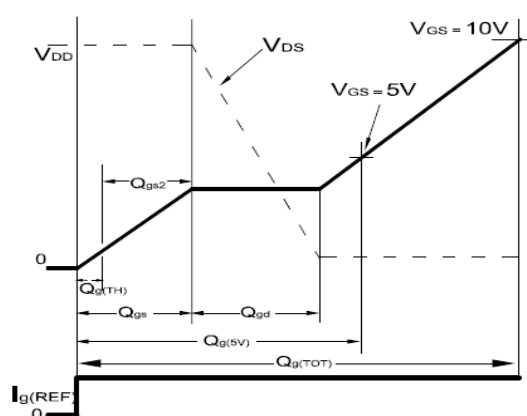


Figure 3
Switching Time Test Circuit

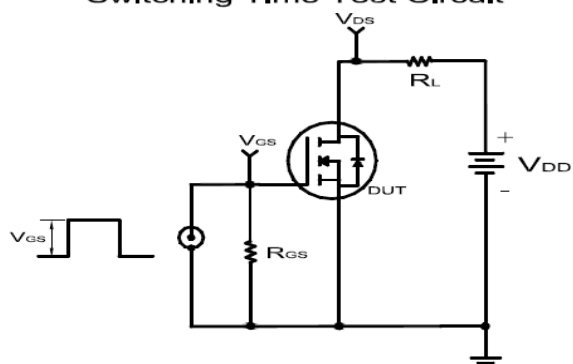


Figure 4
Switching Time Waveforms

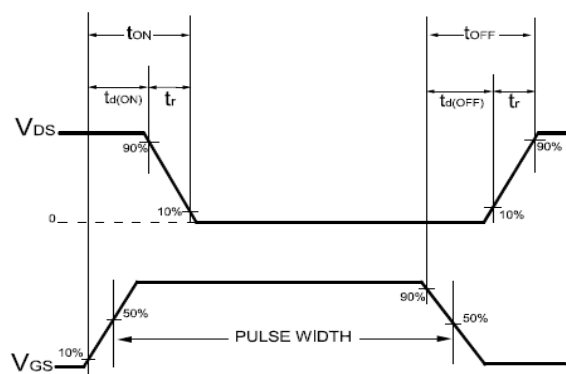


Figure 5
Unclamped Energy Test Circuit

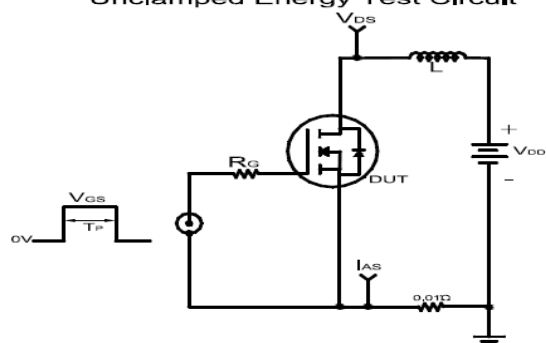
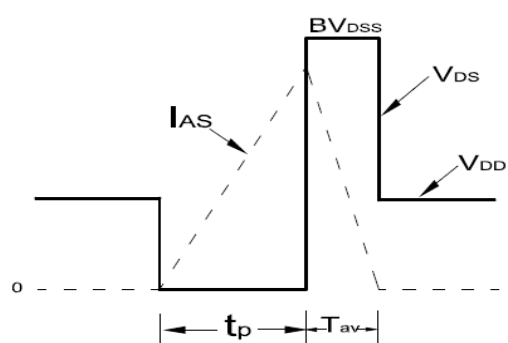


Figure 6
Unclamped Energy Waveforms



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Figure 7
Diode Recovery Test Circuit

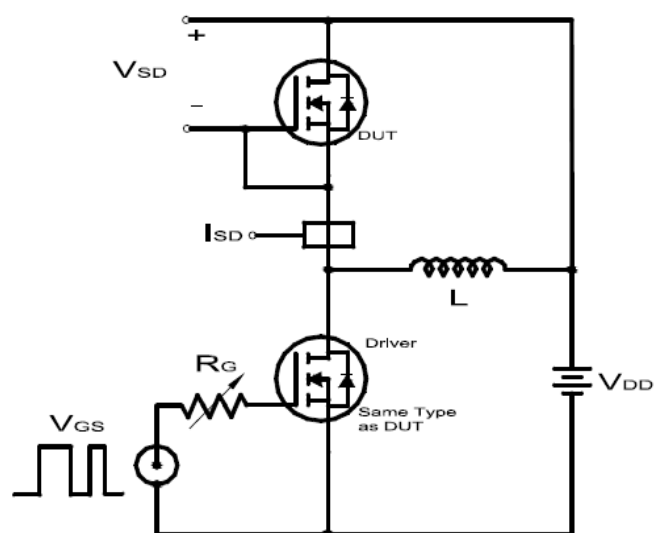
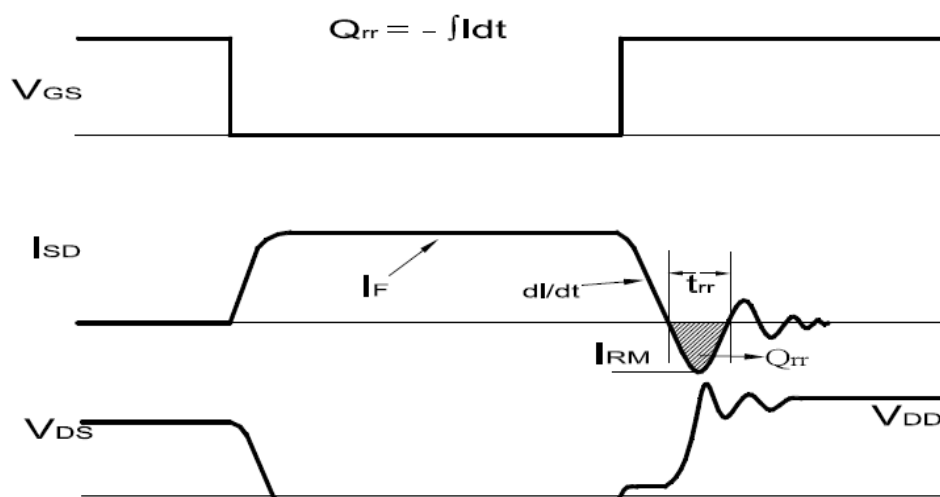


Figure 8
Diode Recovery Test Waveforms



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Package Dimension

TO-220 (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.652	10.16	11.5	H	2.04	2.54	3.04
B	2.54	2.79	3.048	I	1.15	1.52	1.778
C	17.3		22.86	J	3.556	4.57	4.826
D	26.924	29.03	31.242	K	0.508	1.3	1.45
E	14.224	15.45	16.510	L	1.89	2.69	3.09
F	8.382	9.20	9.40	M	0.34	0.5	0.6
G	0.381	0.81	1.016	N			

