

Features

30V,80A

$R_{DS(ON)}=3.4m\Omega$ (Typ.) @ $V_{GS}=10V$

$R_{DS(ON)}=5.7m\Omega$ (Typ.) @ $V_{GS}=4.5V$

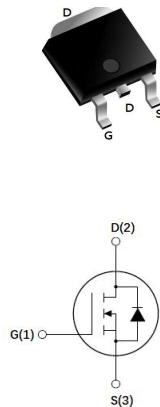
Advanced Trench Technology

Provide Excellent $R_{DS(ON)}$ and Low Gate Charge

Application

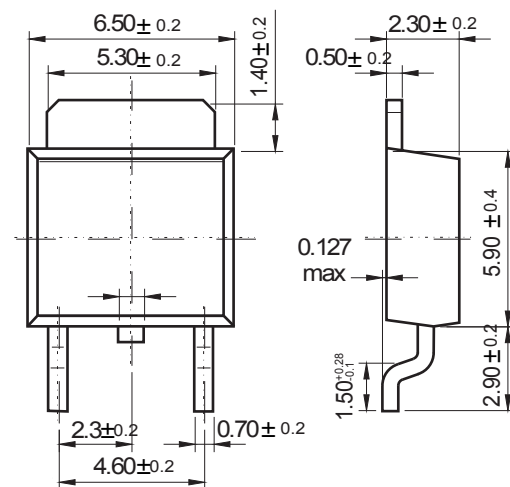
Load Switch

PWM Application



TO-252

Unit: mm



Dimensions in inches and (millimeters)

Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^{\circ}C$	80
		$T_C = 100^{\circ}C$	62
I_{DM}	Pulsed Drain Current ^{note1}	300	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	210	mJ
P_D	Power Dissipation	$T_C = 25^{\circ}C$	81
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.87	$^{\circ}C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^{\circ}C$

3080K

Electrical Characteristics (T_c=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} = 0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)} note3	Static Drain-Source on-Resistance	V _{GS} =10V, I _D =20A	-	3.4	7	mΩ
		V _{GS} =4.5V, I _D =20A	-	5.7	9	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =15A	-	26	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f = 1.0MHz	-	2153	-	pF
C _{oss}	Output Capacitance		-	327	-	pF
C _{rss}	Reverse Transfer Capacitance		-	287	-	pF
Q _g	Total Gate Charge	V _{DS} =25V, I _D =30A, V _{GS} =10V	-	45	-	nC
Q _{gs}	Gate-Source Charge		-	3	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	15	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V	-	21	-	ns
t _r	Turn-on Rise Time		-	32	-	ns
t _{d(off)}	Turn-off Delay Time		-	59	-	ns
t _f	Turn-off Fall Time		-	34	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =30A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	-	15	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	4	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25 Ω , L=0.5mH
 3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

RATING AND CHARACTERISTIC CURVES (3080K)

Figure1: Output Characteristics

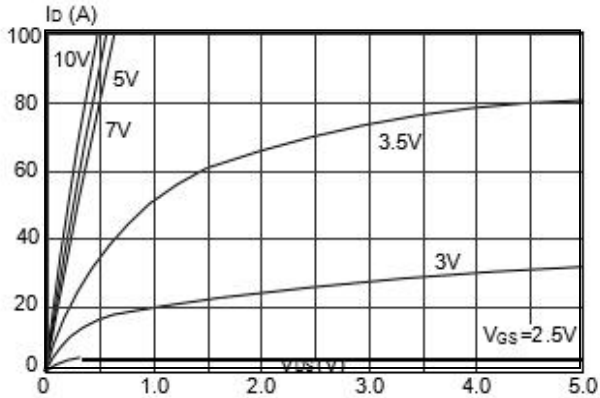


Figure 2: Typical Transfer Characteristics

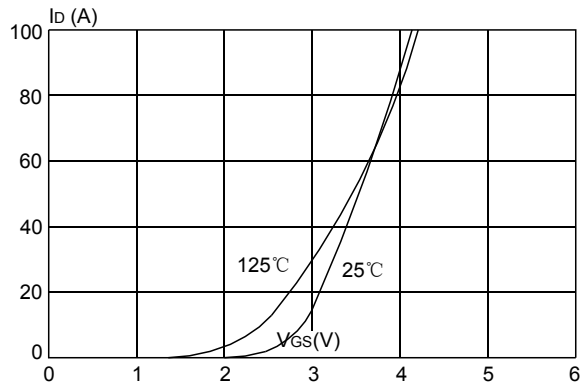


Figure 3: On-resistance vs. Drain Current

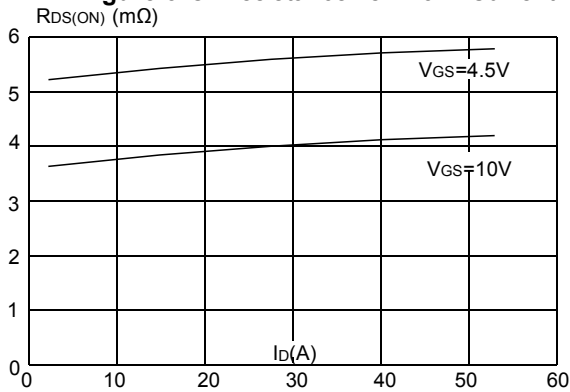


Figure 4: Body Diode Characteristics

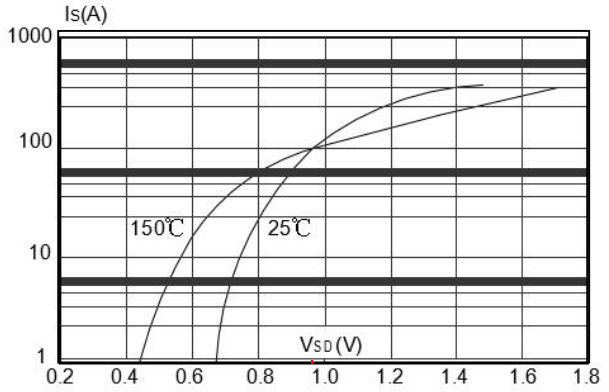


Figure 5: Gate Charge Characteristics

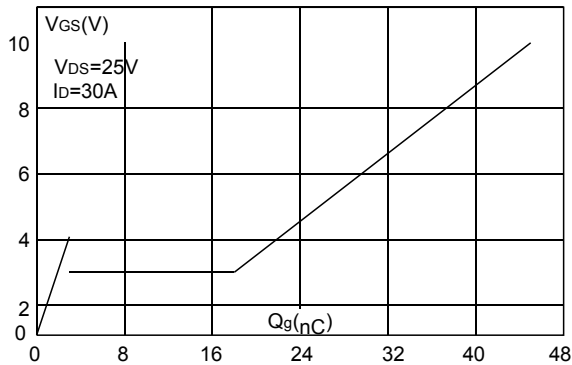
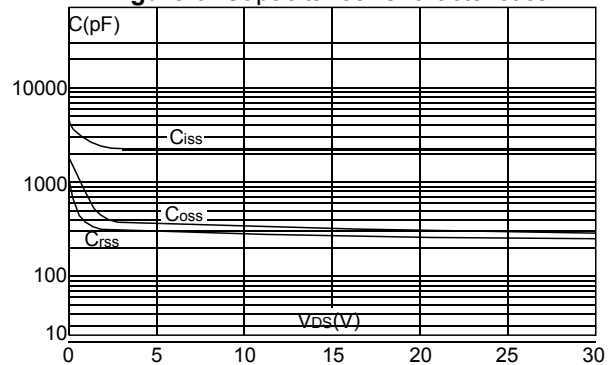


Figure 6: Capacitance Characteristics



RATING AND CHARACTERISTIC CURVES (3080K)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

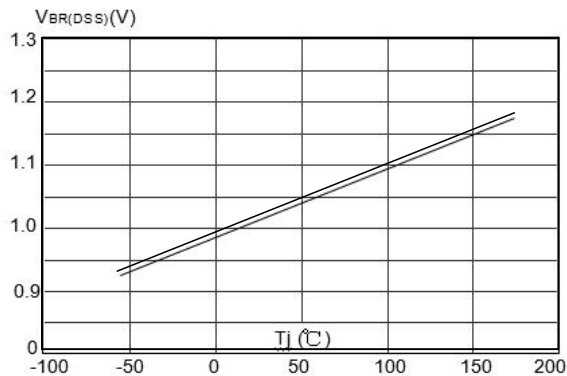


Figure 8: Normalized on Resistance vs. Junction Temperature

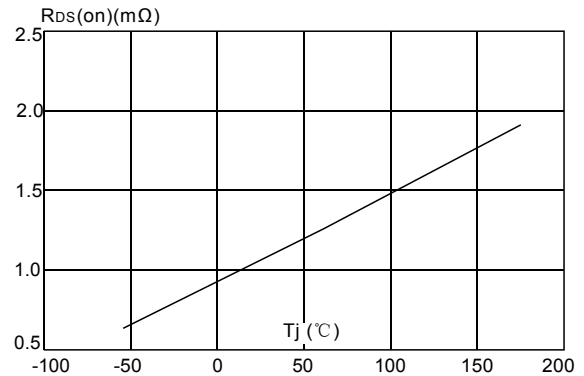


Figure 9: Maximum Safe Operating Area

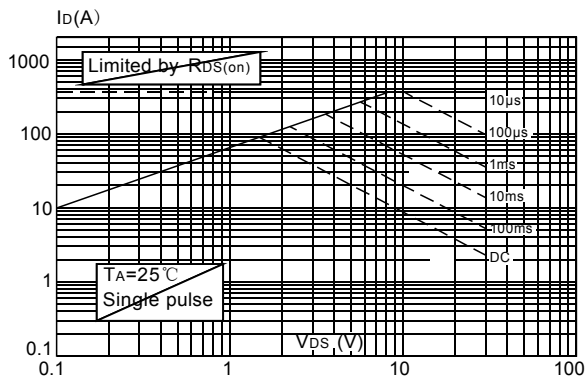


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

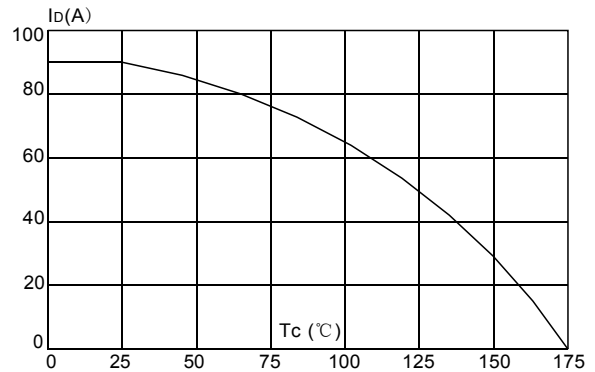
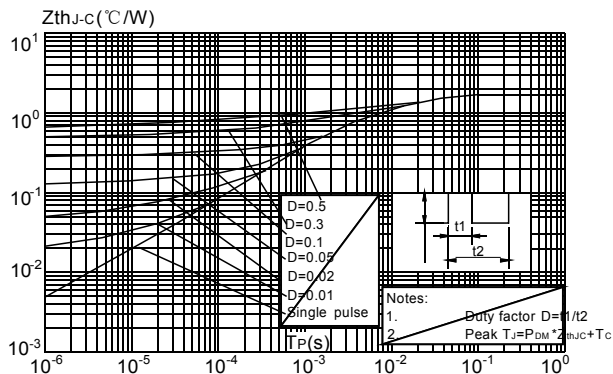


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (TO-252)



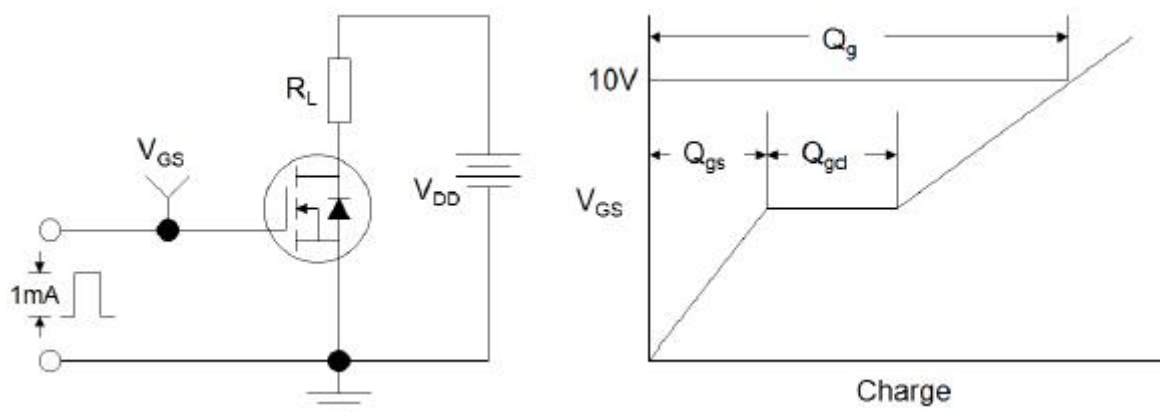


Figure1:Gate Charge Test Circuit & Waveform

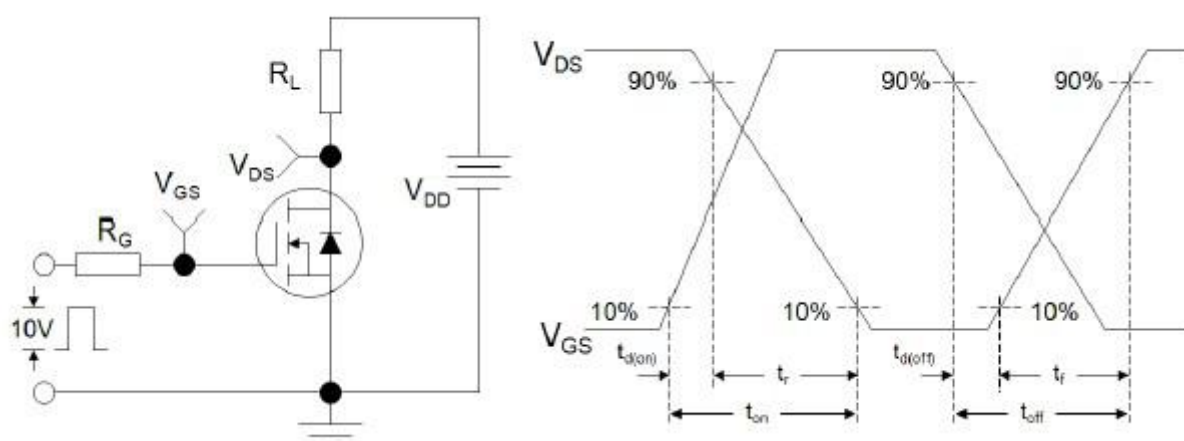


Figure 2: Resistive Switching Test Circuit & Waveforms

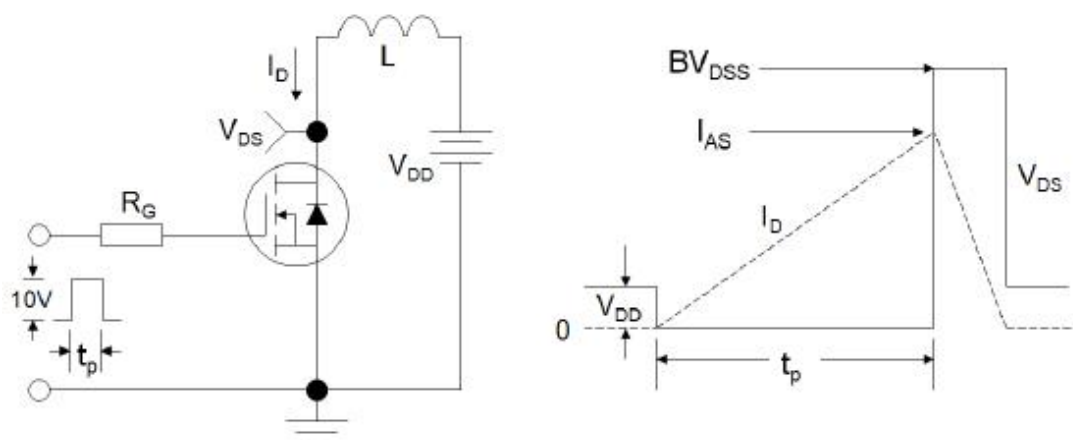


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

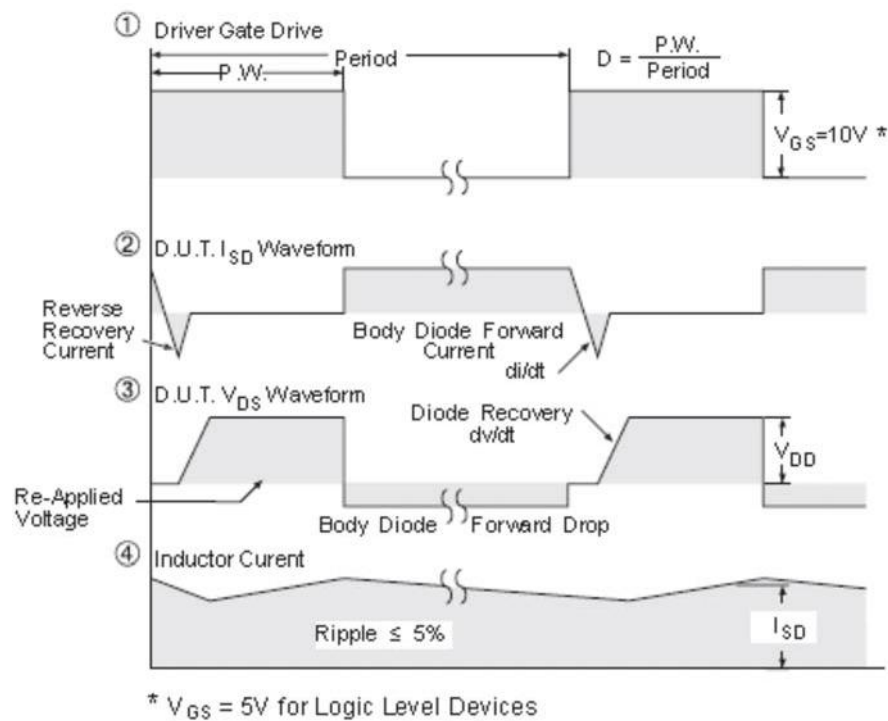
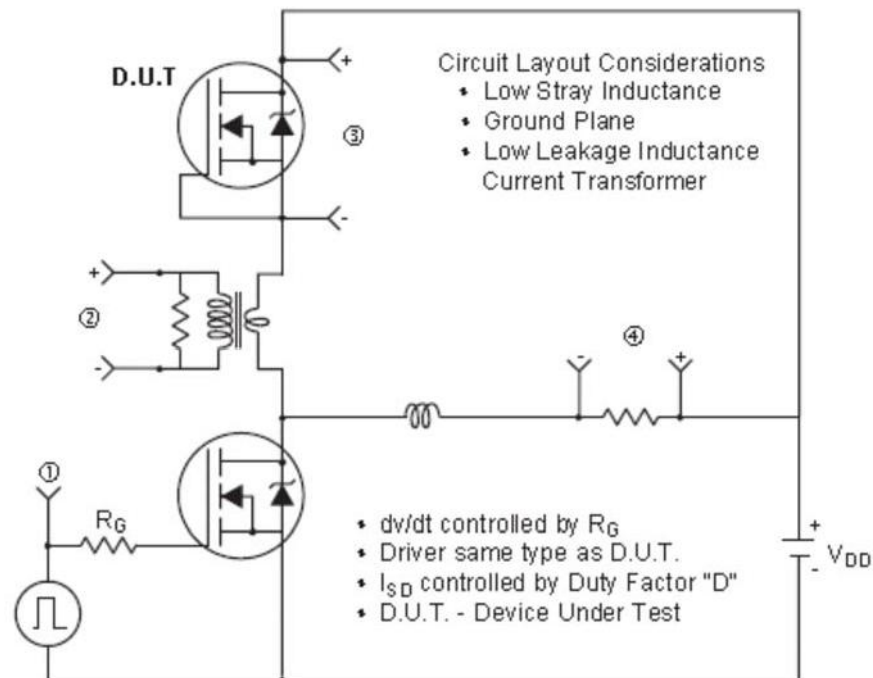


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)