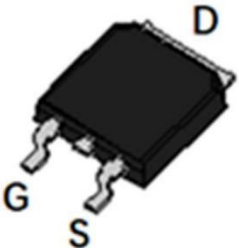

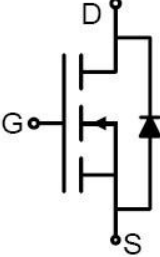


Description

<p>Features</p> <ul style="list-style-type: none"> 30V,100A $R_{DS(ON)} < 4m\Omega @ V_{GS} = 10V$ $R_{DS(ON)} < 7.0m\Omega @ V_{GS} = 4.5V$ Advanced Trench Technology Provide Excellent $R_{DS(ON)}$ and Low Gate Charge Lead free product is acquired 	<p>Application</p> <ul style="list-style-type: none"> Load Switch PWM Application Power management <p style="text-align: center;"><i>100% UIS TESTED!</i> <i>100% ΔV_{ds} TESTED!</i></p>	
 <p>TO-252(DPAK) top view</p>	 <p>Marking and pin Assignment</p>	 <p>Schematic Diagram</p>

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	$T_C = 25^\circ C$	100
		$T_C = 100^\circ C$	65
I_{DM}	Pulsed Drain Current ^{note1}	320	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	121	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	70
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.14	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ C$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	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	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=30A$	-	3.0	4	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	4.8	7.0	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	2680	-	pF
C_{oss}	Output Capacitance		-	393	-	pF
C_{rss}	Reverse Transfer Capacitance		-	330	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=30A,$ $V_{GS}=10V$	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	7.2	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	10.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=30A, R_{GEN}=3\Omega,$ $V_{GS}=10V$	-	23	-	ns
t_r	Turn-on Rise Time		-	28	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	74	-	ns
t_f	Turn-off Fall Time		-	36	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	100	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	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	$I_F=20A, di/dt=100A/\mu s$	-	28	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	21	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=20V, V_G=10V, R_G=25\Omega, L=0.5Mh, I_{AS}=22A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Figure 1: Output Characteristics

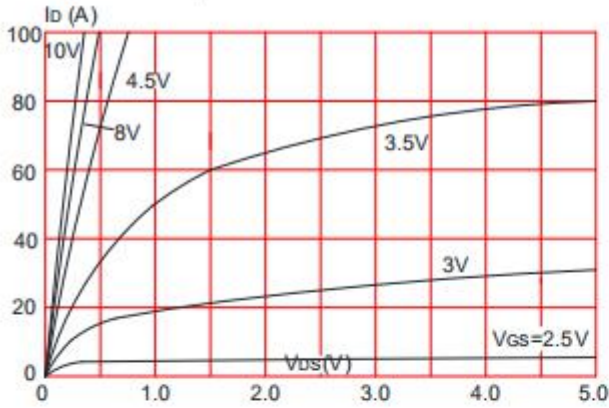


Figure 2: Typical Transfer Characteristics

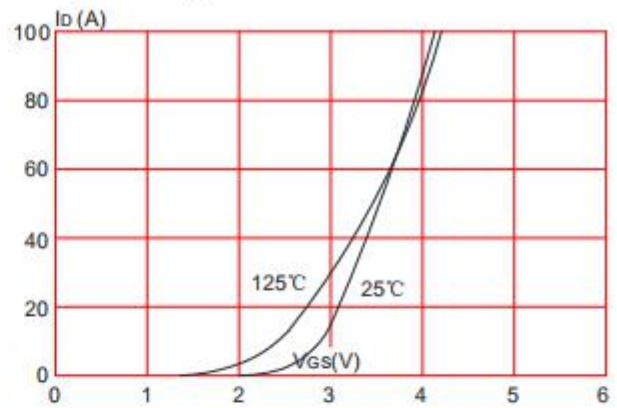


Figure 3: On-resistance vs. Drain Current

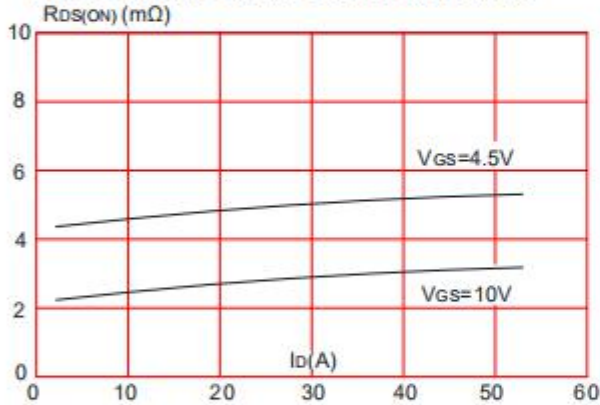


Figure 4: Body Diode Characteristics

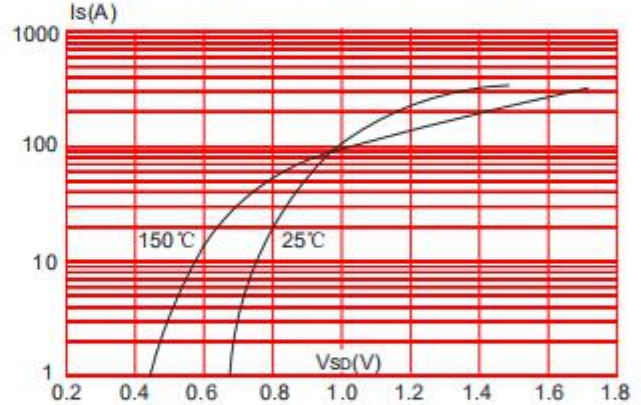


Figure 5: Gate Charge Characteristics

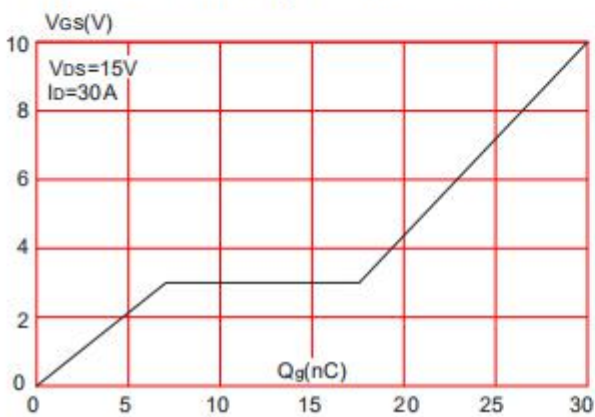


Figure 6: Capacitance Characteristics

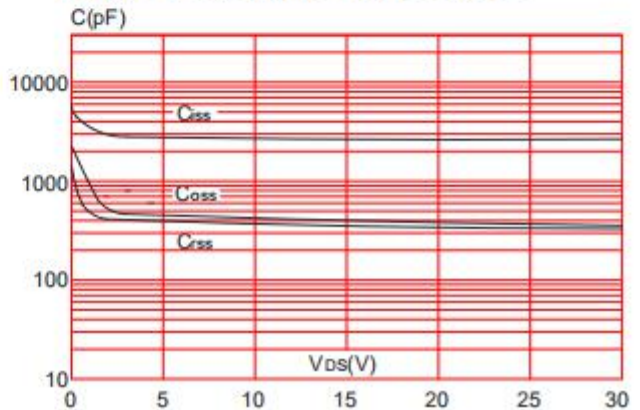


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

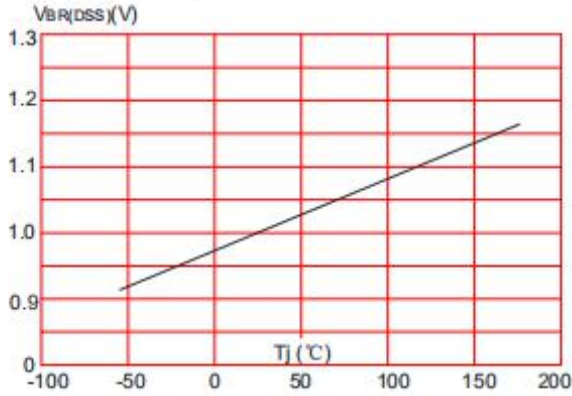


Figure 8: Normalized on Resistance vs. Junction Temperature

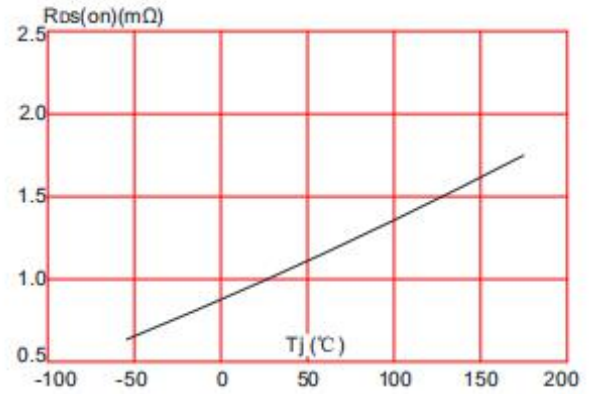


Figure 9: Maximum Safe Operating Area

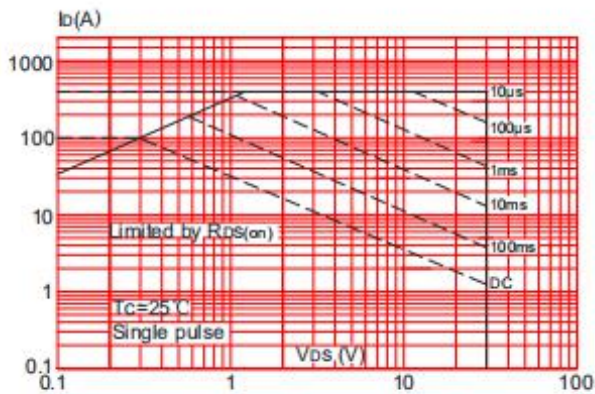


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

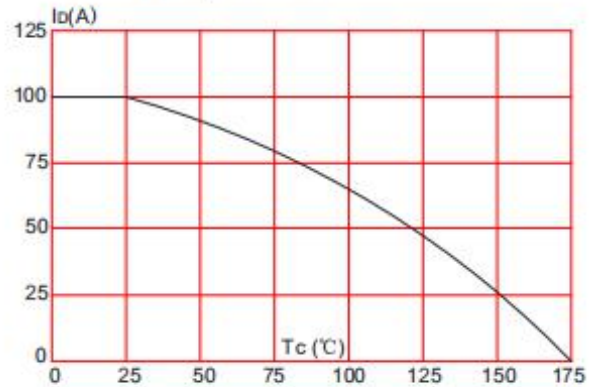
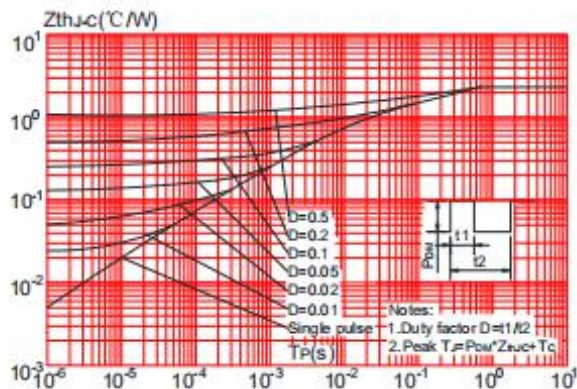


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

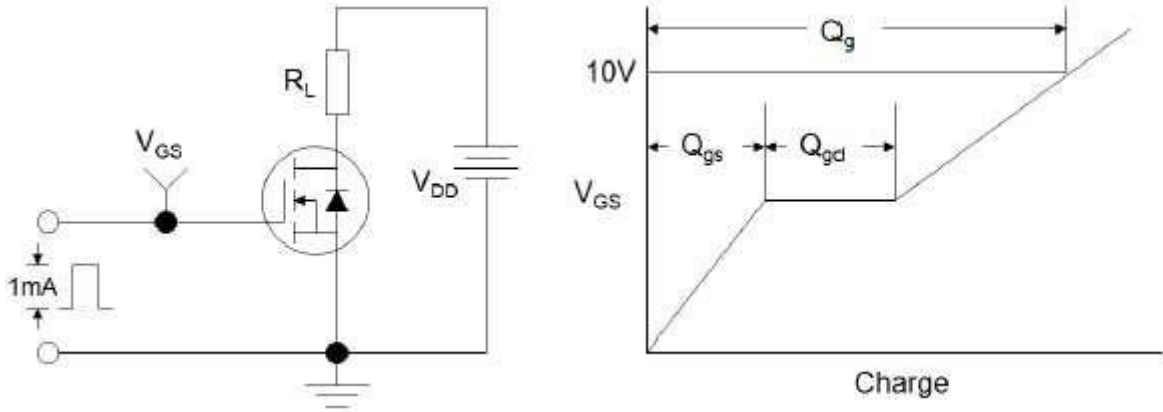


Figure1:Gate Charge Test Circuit & Waveform

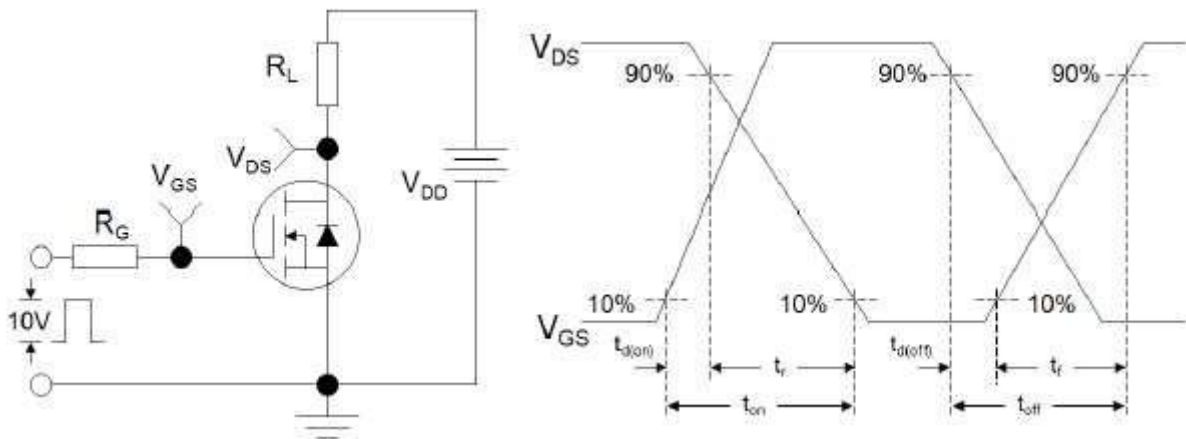


Figure 2: Resistive Switching Test Circuit & Waveforms

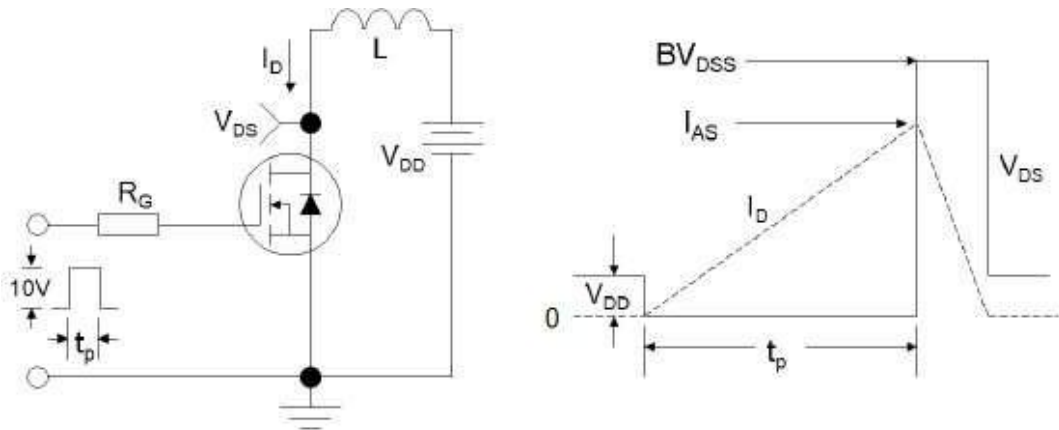
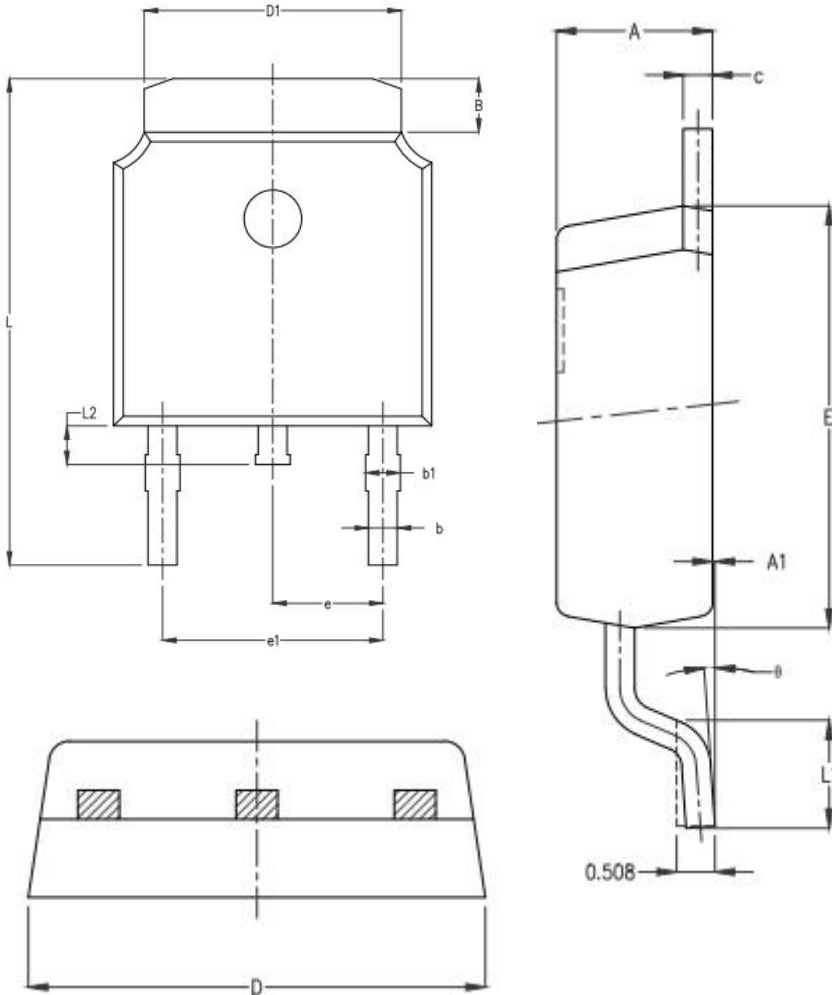


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



TO-252 Package Information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.15	2.25	2.35
A1	0.00	0.06	0.12
B	0.96	1.11	1.26
b	0.59	0.69	0.79
b1	0.69	0.81	0.93
c	0.34	0.42	0.50
D	6.45	6.60	6.75
D1	5.23	5.33	5.43
E	5.95	6.10	6.25
e	2.286TYP.		
e1	4.47	4.57	4.67
L	9.90	10.10	10.30
L1	1.40	1.55	1.70
L2	0.60	0.80	1.00
θ	0°	4°	8°