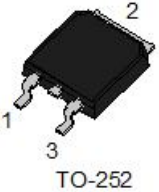

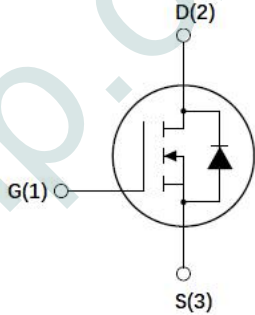


Description

<p>Features</p> <ul style="list-style-type: none"> • 30V,80A • $R_{DS(ON)}=3.7m\Omega$ (Typ.) @ $V_{GS}=10V$ • $R_{DS(ON)}=5.3m\Omega$ (Typ.) @ $V_{GS}=4.5V$ • Advanced Trench Technology • Provide Excellent $R_{DS(ON)}$ and Low Gate Charge 	<p>Application</p> <ul style="list-style-type: none"> • Load Switch • PWM Application
<p>Package</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>	

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

Symbol	Parameter	Value	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
		$T_C = 100^\circ C$	56
I_{DM}	Pulsed Drain Current ^{note1}	224	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	225	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	76
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.89	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ C$

Electrical Characteristics ($T_C=25^\circ\text{C}$ 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	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1	1.5	1.9	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=20A$	-	3.7	4.5	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	5.3	6.8	
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=20A$	-	5.798	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	1800	-	pF
C_{oss}	Output Capacitance		-	269	-	pF
C_{rss}	Reverse Transfer Capacitance		-	247	-	pF
Q_{g10V}	Total Gate Charge	$V_{DS}=15V, I_D=20A,$ $V_{GS}=10V$	-	38.8	-	nC
$Q_{g4.5V}$	Total Gate Charge		-	18.9	-	nC
Q_{gs}	Gate-Source Charge		-	6.9	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	8.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V, I_D=20A,$ $R_{GEN}=3\Omega,$ $RL=0.75\Omega, V_{GS}=10V$	-	8.4	-	ns
t_r	Turn-on Rise Time		-	64.8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	32.3	-	ns
t_f	Turn-off Fall Time		-	51.2	-	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		-	-	224	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	$I_F=20A, di/dt=100A/\mu s$	-	49.66	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	34.25	-	nC

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

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

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

Typical Performance Characteristics

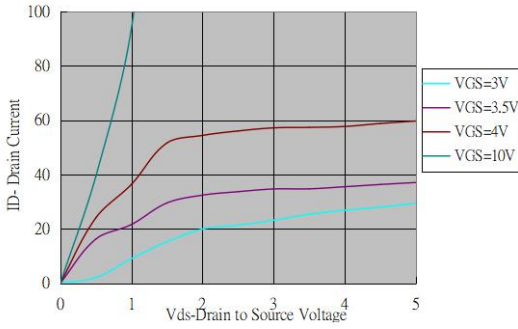


Figure 1: Output Characteristics I_D (A)

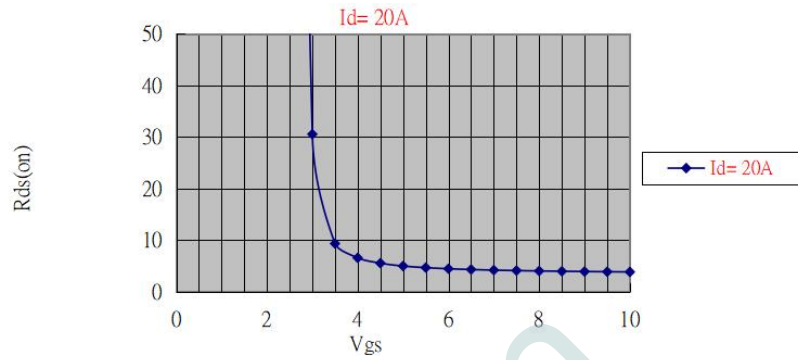


Figure 2: Typical Transfer Characteristics I_D (A)

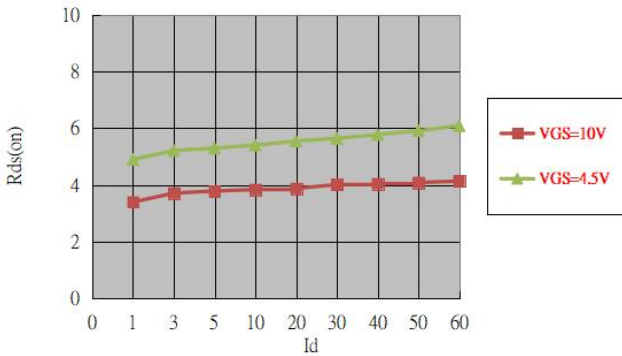


Figure 3: On-resistance vs. Drain Current $R_{DS(ON)}$ ($m\Omega$)

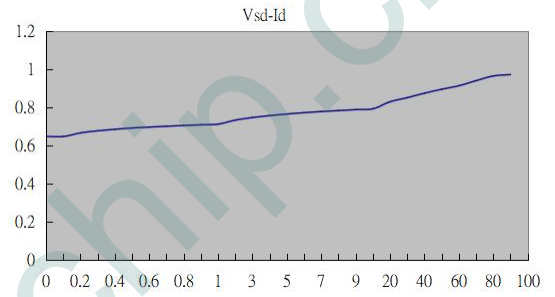


Figure 4: Body Diode Characteristics I_s (A)

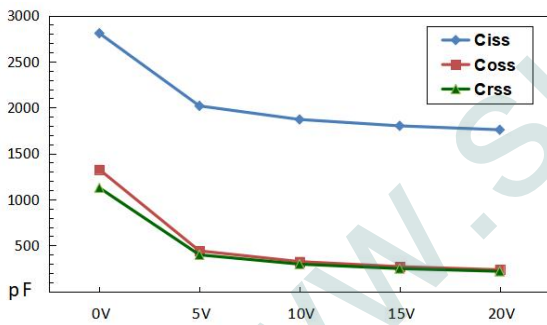


Figure 5: Capacitance Characteristics C (pF)

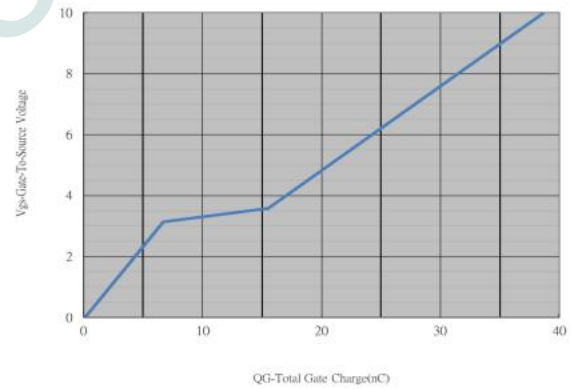


Figure 6: Gate-Charge Characteristics Q_G (nC)

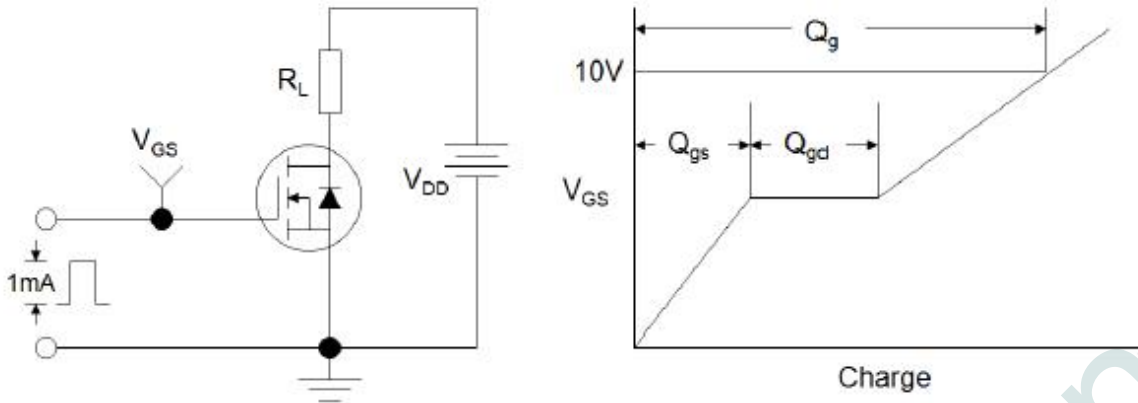


Figure1:Gate Charge Test Circuit & Waveform

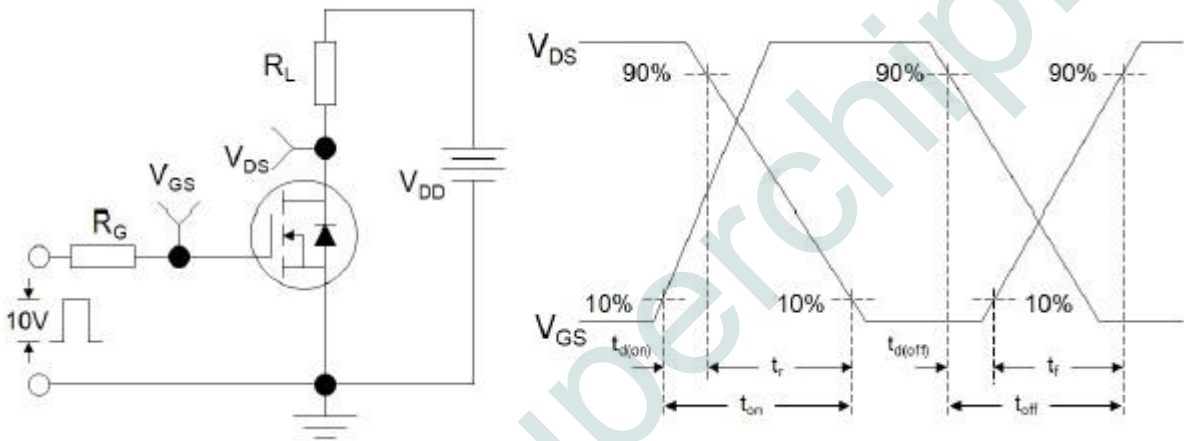


Figure 2: Resistive Switching Test Circuit & Waveforms

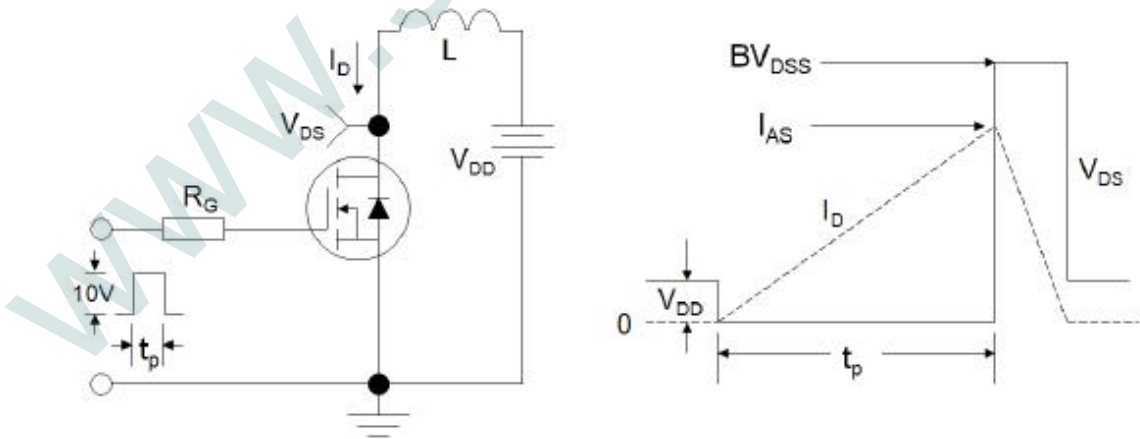


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

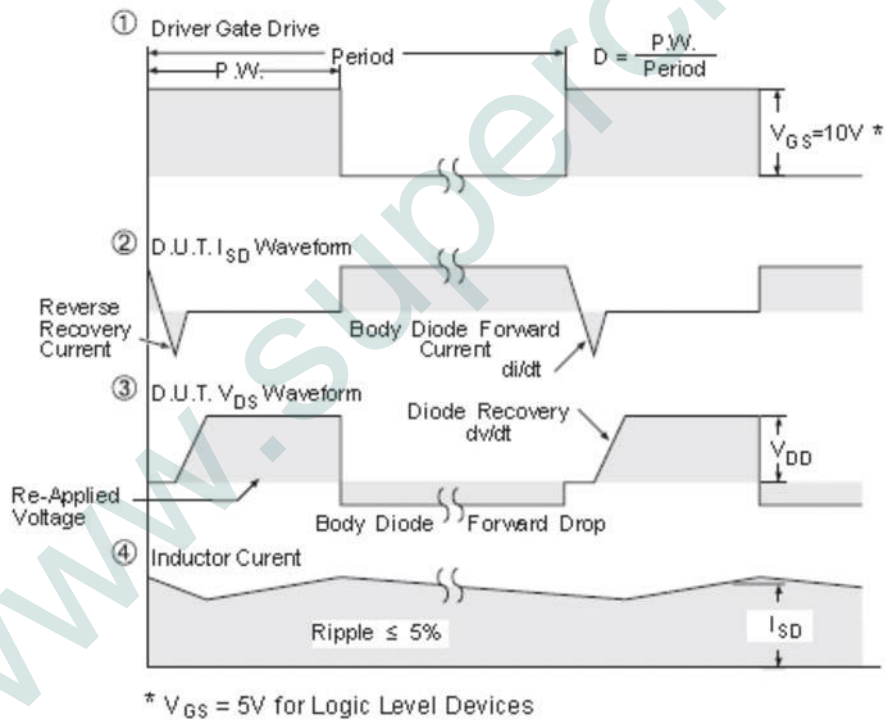
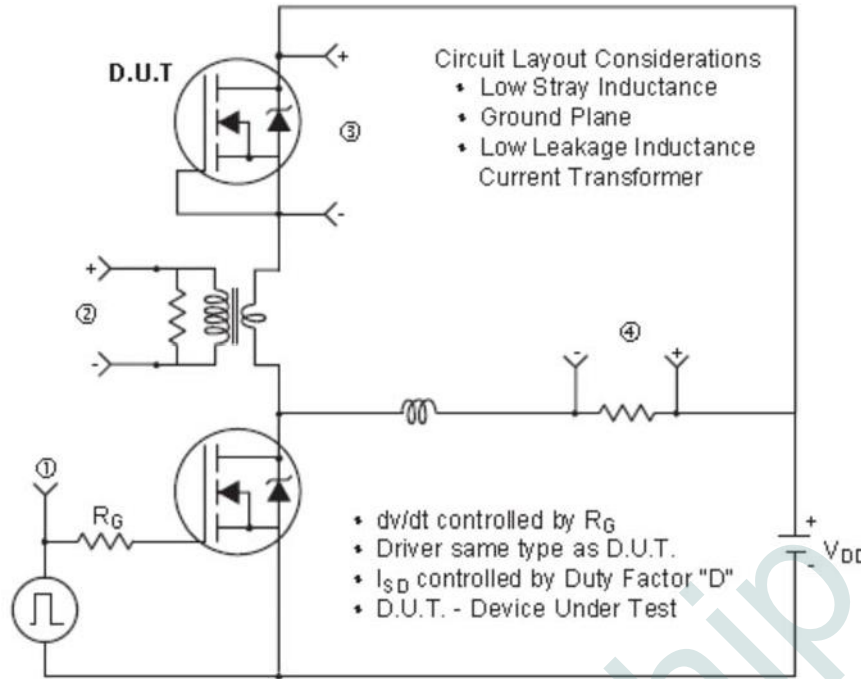
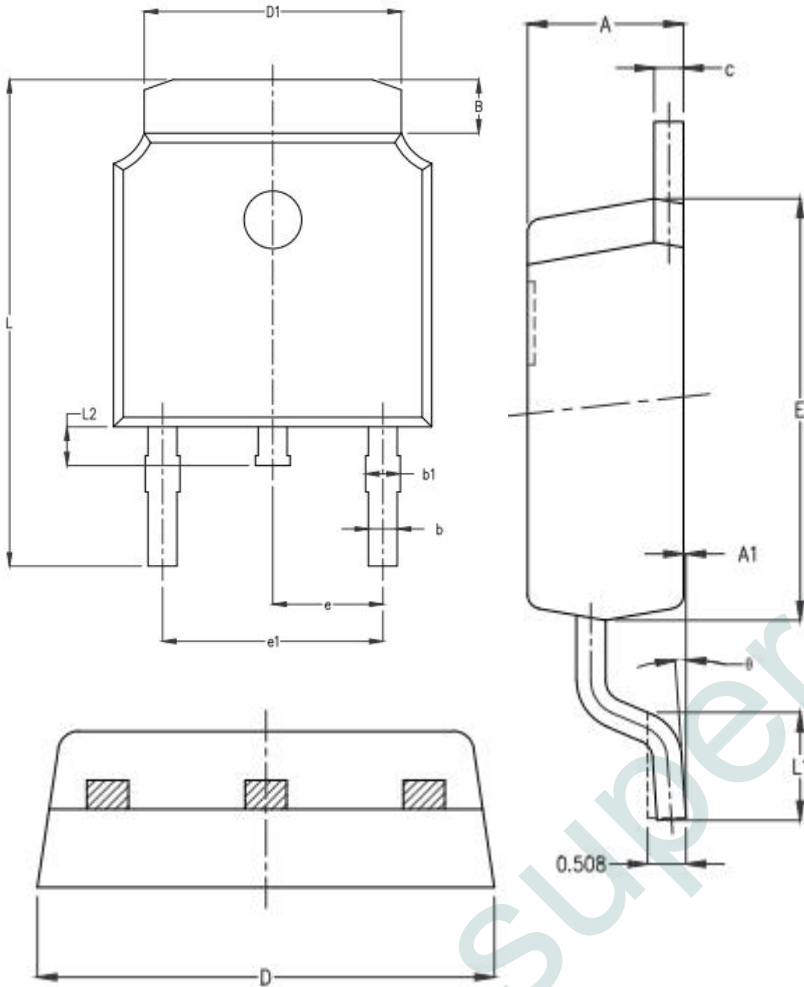


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

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°