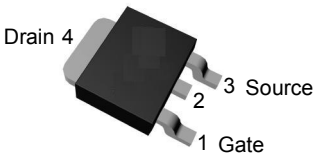
Features

- -200V/-8A,
  $R_{DS(ON)}$= 680mΩ (max.) @ V_{GS}=-10V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

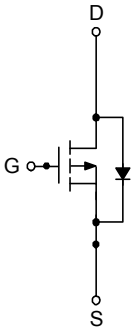
Applications

- Power Management for Industrial DC / DC Converters.
- Load switch.

Pin Description



Top View of TO-252-2



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-200	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_A=25°C	-8	A
I_D	Continuous Drain Current	T_A=25°C	-8	A
		T_A=70°C	-4.8	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	-6.8	
P_D	Maximum Power Dissipation	T_A=25°C	1.78	W
		T_A=70°C	1.14	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient		70	°C/W
I_{AS} [c]	Avalanche Current, Single pulse	L=0.5mH	14	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.5mH	49	mJ

Note a：Pulse width limited by maximum junction temperature.
Note b：Surface mounted on $1in^2$ pad area.
Note c：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-200	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-120V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-2	-3	-4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-4A	-	-	680	mΩ
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.75	-1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=-1.6A, dI_{SD}/dt=100A/μs	-	40	-	ns
Q_{rr}	Reverse Recovery Charge		-	83	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,*f*=1MHz	-	13	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-30V, Frequency=1.0MHz	-	910	1200	pF
C_{oss}	Output Capacitance		-	82	-	
C_{rss}	Reverse Transfer Capacitance		-	37	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-30V, R_L=30Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	11	20	ns
t_r	Turn-on Rise Time		-	9	17	
$t_{d(OFF)}$	Turn-off Delay Time		-	51	92	
t_f	Turn-off Fall Time		-	25	45	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=-75V, V_{GS}=-10V, I_{DS}=-1.6A	-	20	28	nC
Q_{gs}	Gate-Source Charge		-	4.3	-	
Q_{gd}	Gate-Drain Charge		-	5.3	-	

Note d：Pulse test; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

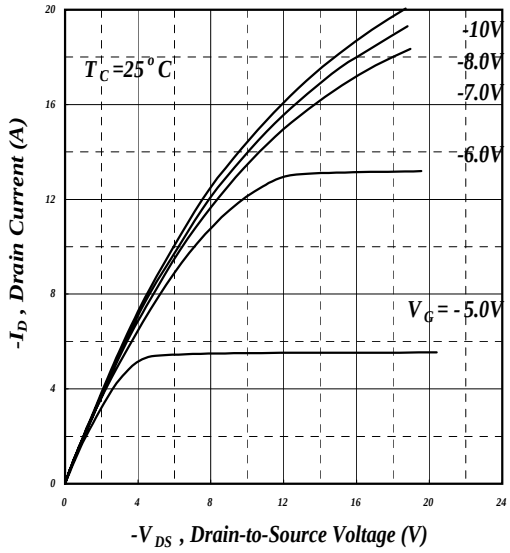


Fig 1. Typical Output Characteristics

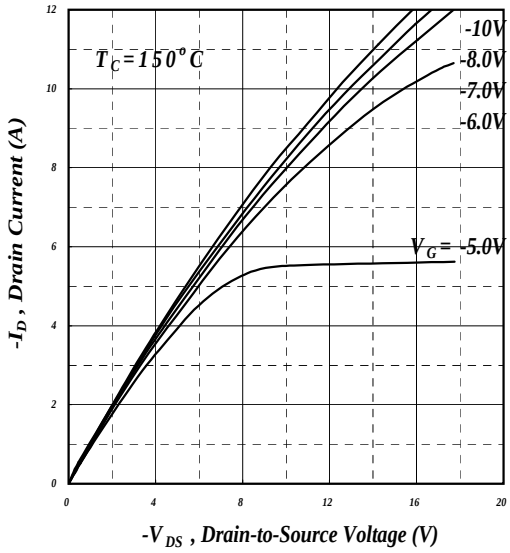


Fig 2. Typical Output Characteristics

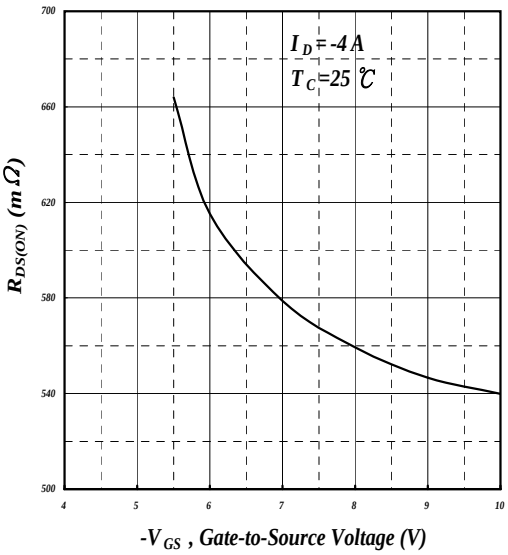


Fig 3. On-Resistance v.s. Gate Voltage

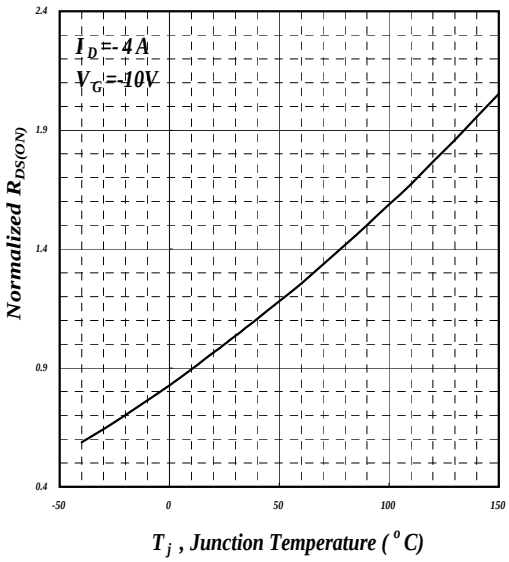


Fig 4. Normalized On-Resistance v.s. Junction Temperature

Typical Operating Characteristics (Cont.)

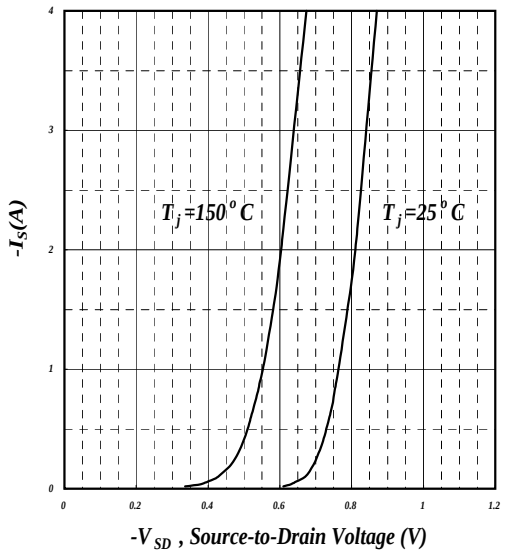


Fig 5. Forward Characteristic of Reverse Diode

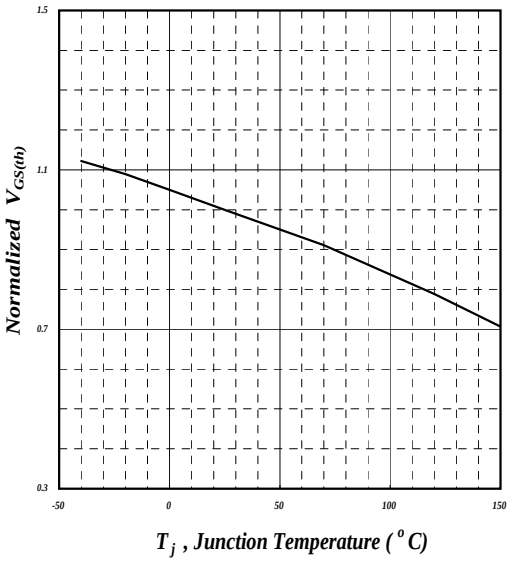


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

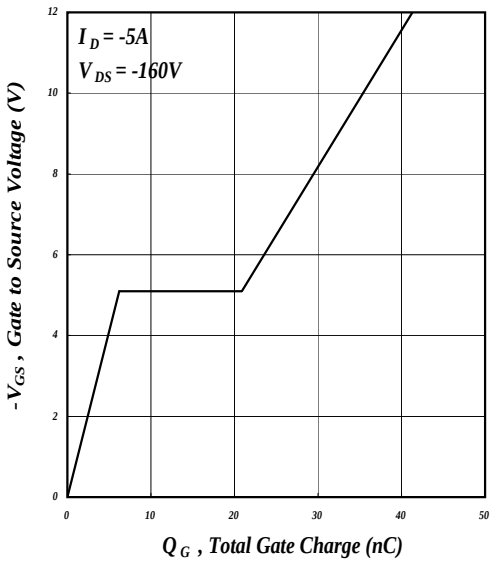


Fig 7. Gate Charge Characteristics

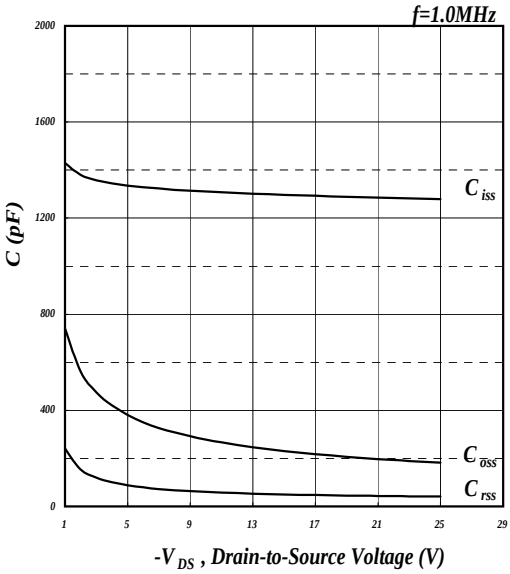


Fig 8. Typical Capacitance Characteristics

Typical Operating Characteristics (Cont.)

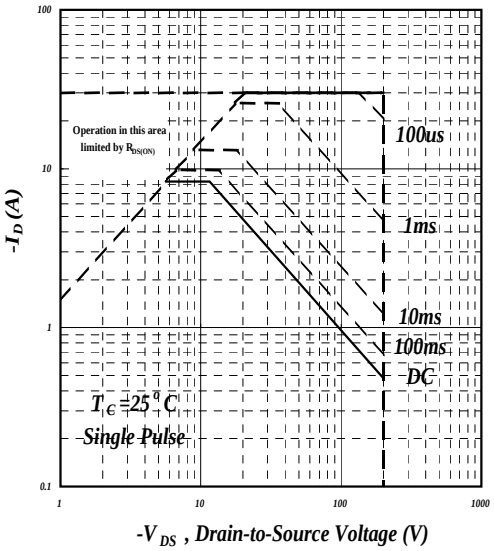


Fig 9. Maximum Safe Operating Area

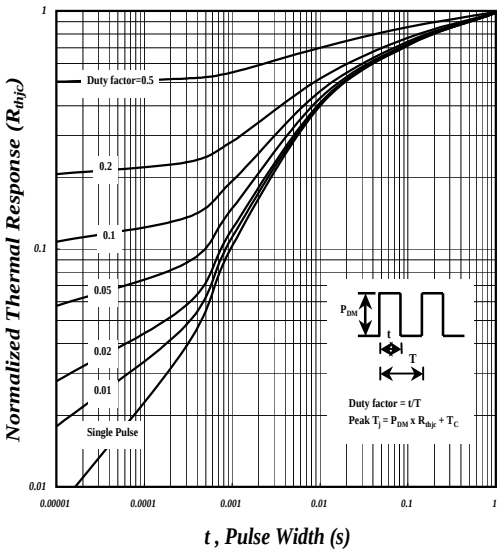


Fig 10. Effective Transient Thermal Impedance

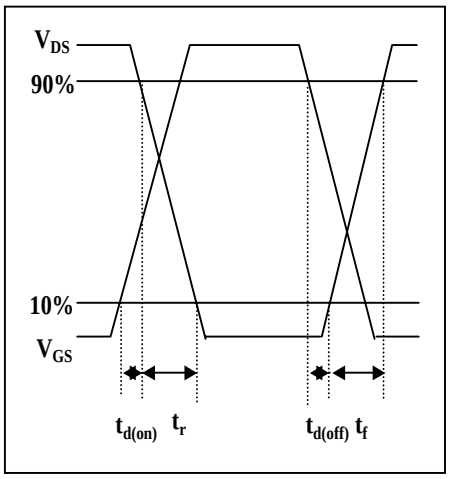


Fig 11. Switching Time Waveform

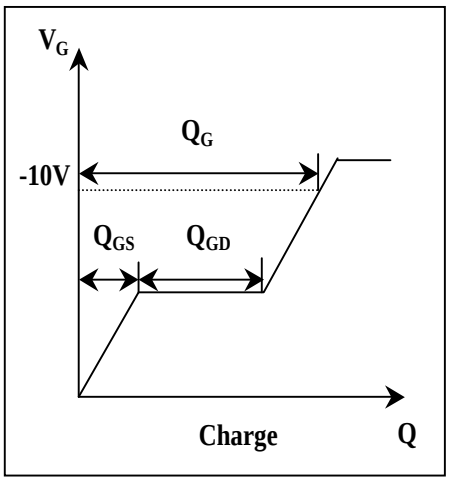
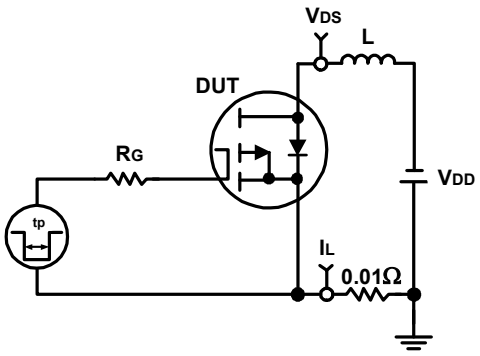
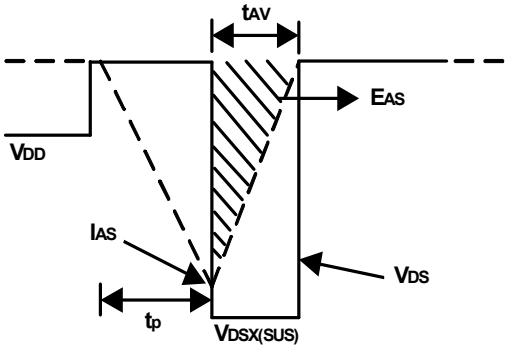


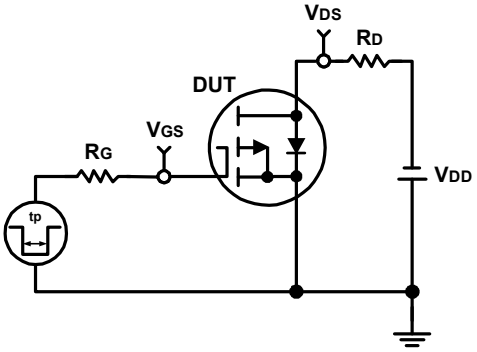
Fig 12. Gate Charge Waveform

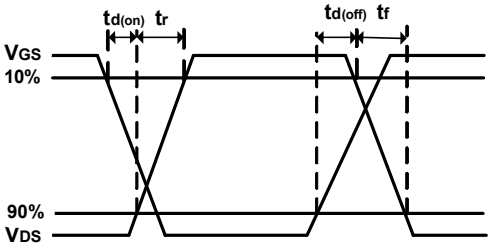
Avalanche Test Circuit and Waveforms



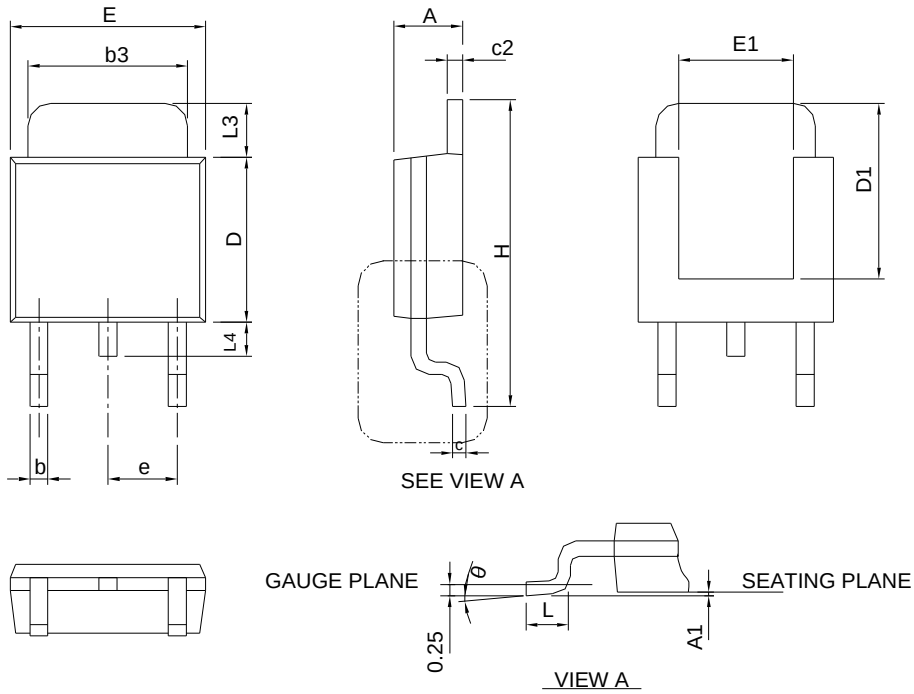


Switching Time Test Circuit and Waveforms





Package Information



SYMBOL	TO-252-2			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1	-	0.13	-	0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4	-	1.02	-	0.040
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-252 .

RECOMMENDED LAND PATTERN