Features

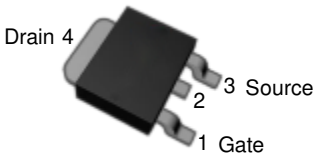
- -60V/-10A,
  $R_{DS(ON)}$ =100mΩ(typ.) @ V_{GS} =-10V
  $R_{DS(ON)}$ =135mΩ(typ.) @ V_{GS} =-4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- 100% UIS + R_g Tested

Note : The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.

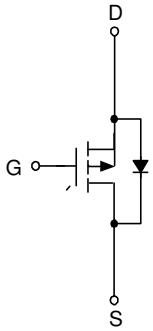
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



Top View of TO-252-2



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T_A= 25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		-60	V
V_{GSS}	Gate-Source Voltage		±25	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_C=25°C	-10	A
I_D	Continuous Drain Current	T_C=25°C	-10	
		T_C=100°C	-7.5	
I_{DM}	Pulsed Drain Current	T_C=25°C	-30	
P_D	Maximum Power Dissipation	T_C=25°C	44.6	W
		T_C=100°C	17.9	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	2.8	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
		Steady State	55	
I_{AS} [a]	Avalanche Current, Single pulse (L=0.1mH)		38	A
E_{AS} [a]	Avalanche Energy, Single pulse (L=0.1mH)		72	mJ

Note * : Current limited by bond wire.

Note a : UIS tested and pulse width are limited by maximum junction temperature 150°C (initial temperature T_J = 25°C).

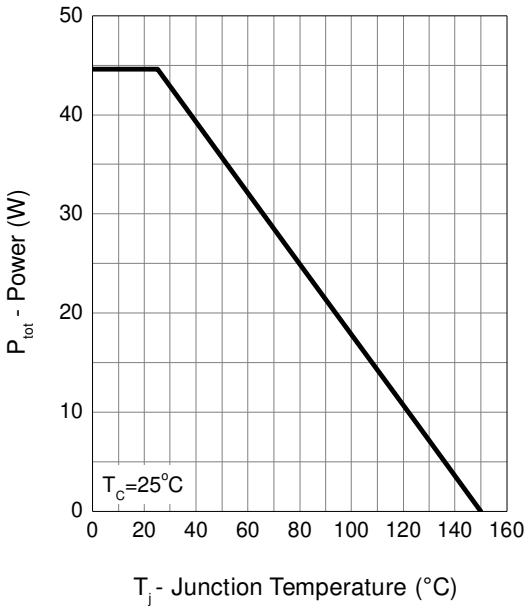
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-48V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1	-1.7	-2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [b]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-5.8A	-	100	120	mΩ
		V_{GS}=-4.5V, I_{DS}=-3.5A	-	135	160	
Diode Characteristics						
V_{SD} [b]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr} [c]	Reverse Recovery Time	I_{SD}=-5.8A, dI_{SD}/dt=100A/μs	-	22	-	ns
Q_{rr} [c]	Reverse Recovery Charge		-	23	-	nC
Dynamic Characteristics [c]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	10	20	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-30V, Frequency=1.0MHz	-	940	-	pF
C_{oss}	Output Capacitance		-	86	-	
C_{rss}	Reverse Transfer Capacitance		-	36	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-30V, R_L=30Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	9	-	ns
t_r	Turn-on Rise Time		-	6	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	36	-	
t_f	Turn-off Fall Time		-	25	-	
Gate Charge Characteristics [c]						
Q_g	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V, I_{DS}=-5.8A	-	12	-	nC
Q_{gs}	Gate-Source Charge		-	1.5	-	
Q_{gd}	Gate-Drain Charge		-	3.3	-	

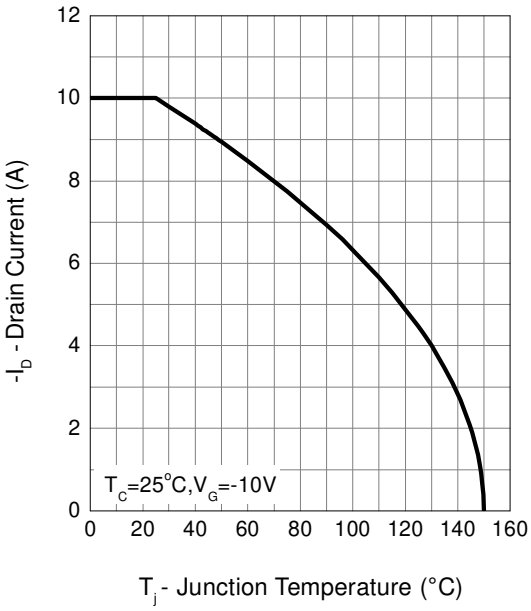
Note b：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note c：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

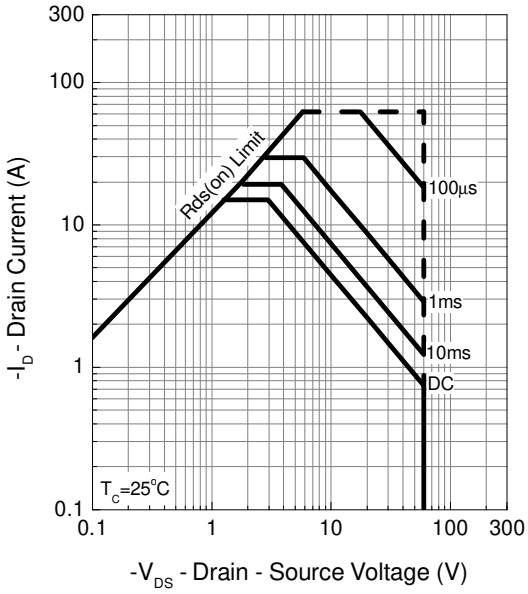
Power Dissipation



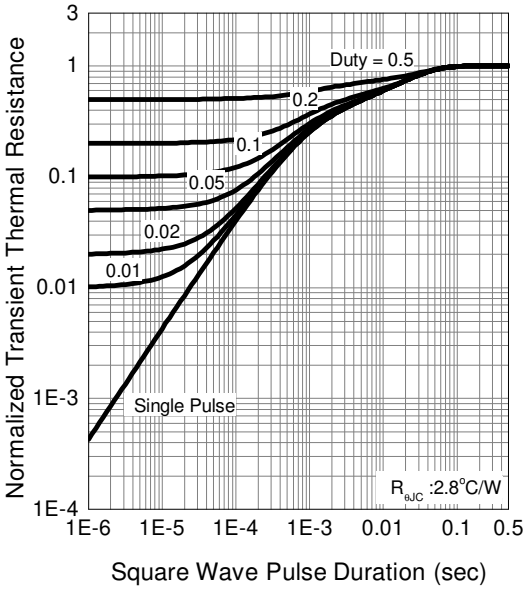
Drain Current



Safe Operation Area

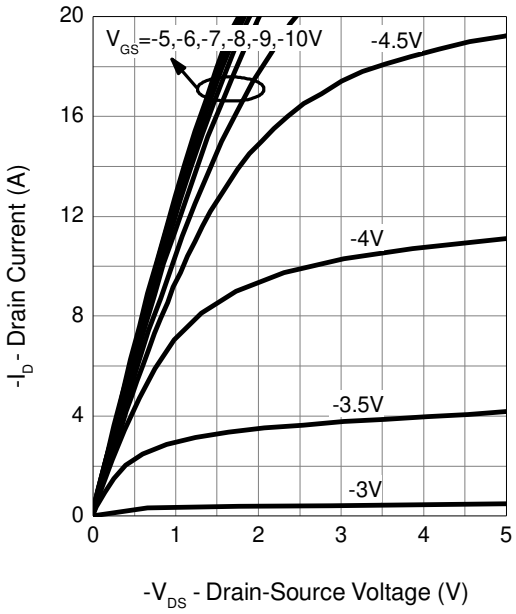


Thermal Transient Impedance

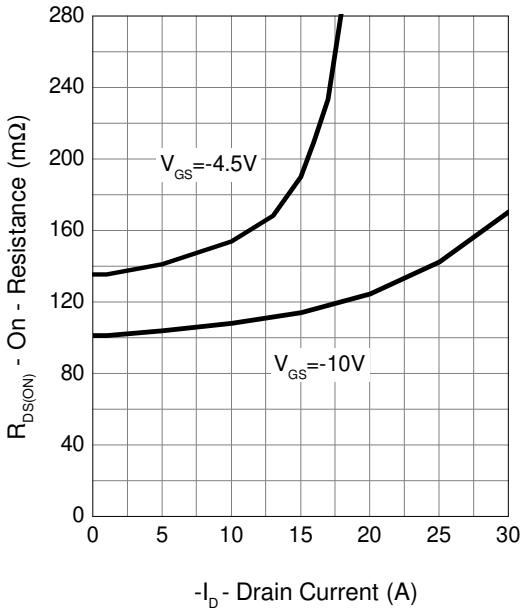


Typical Operating Characteristics (Cont.)

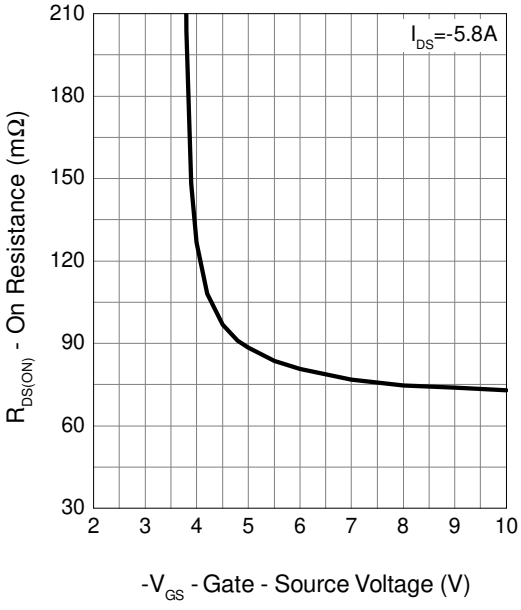
Output Characteristics



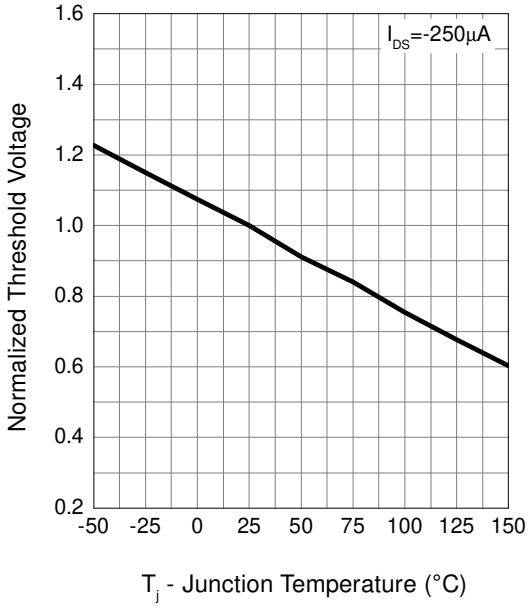
Drain-Source On Resistance



Gate-Source On Resistance

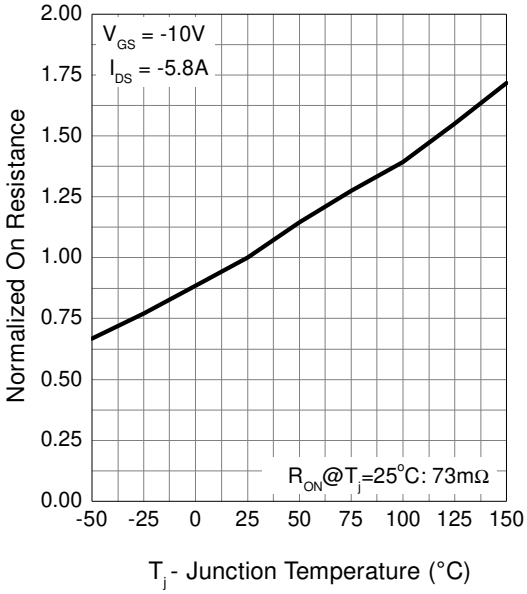


Gate Threshold Voltage

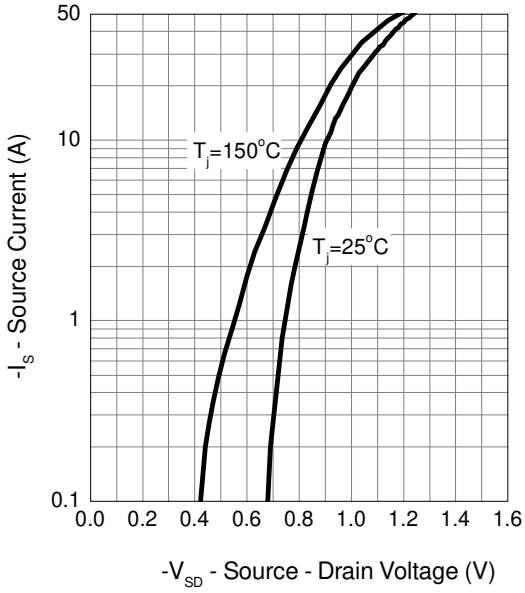


Typical Operating Characteristics (Cont.)

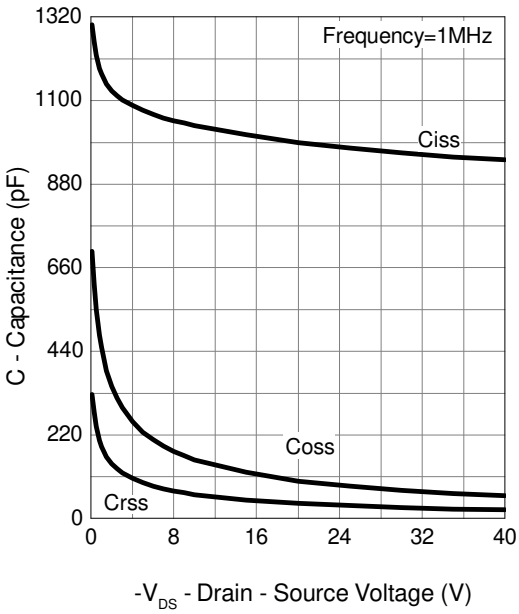
Drain-Source On Resistance



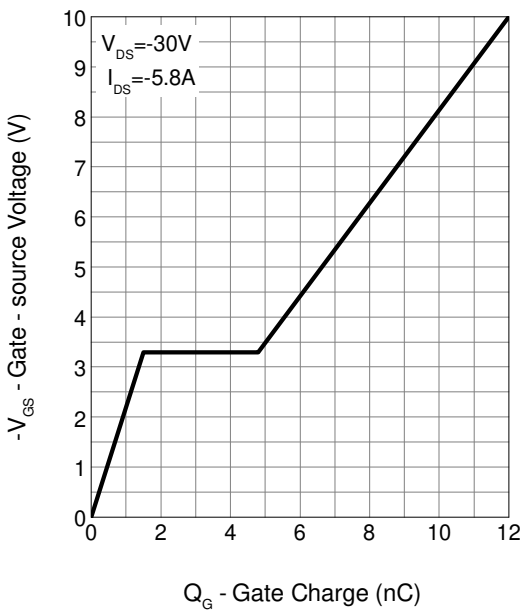
Source-Drain Diode Forward



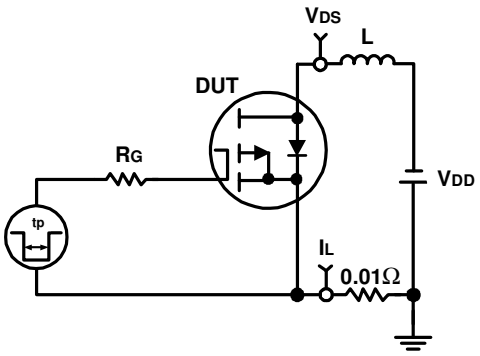
Capacitance

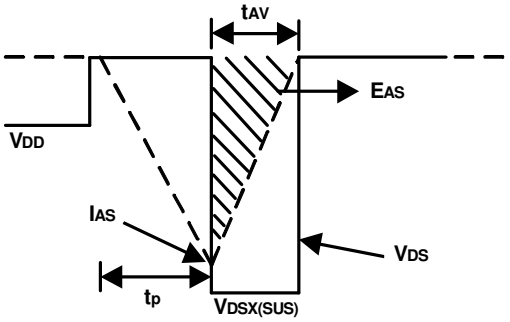


Gate Charge

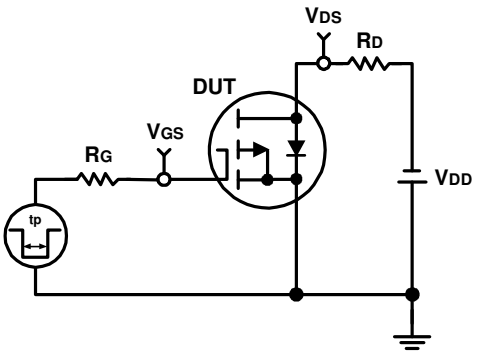


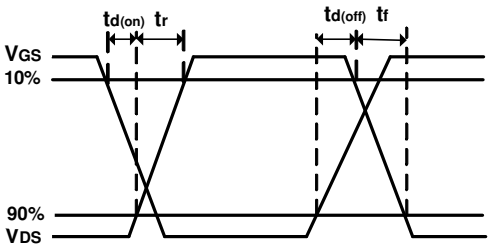
Avalanche Test Circuit and Waveforms





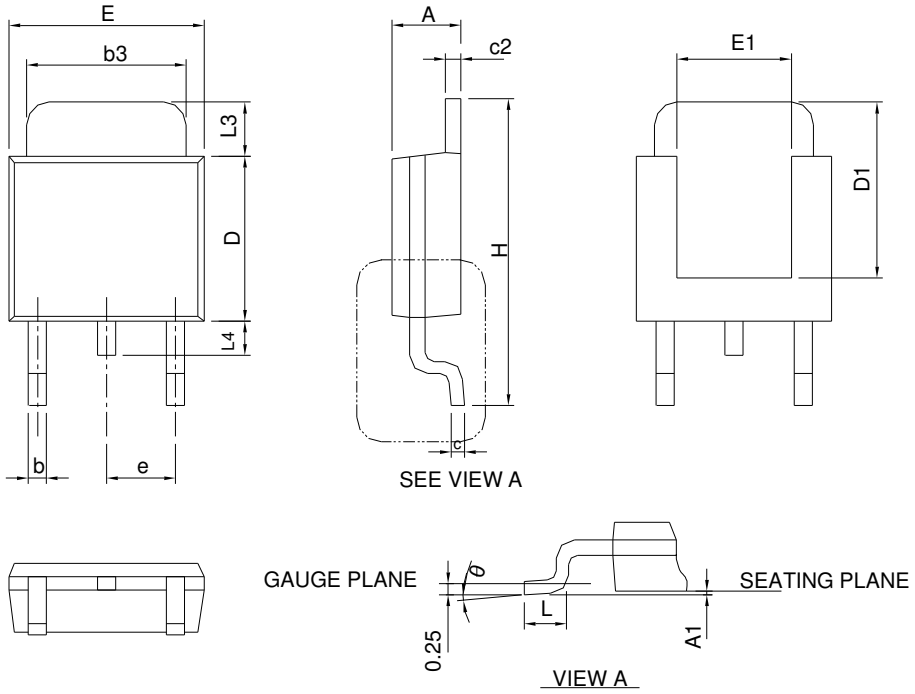
Switching Time Test Circuit and Waveforms





Package Information

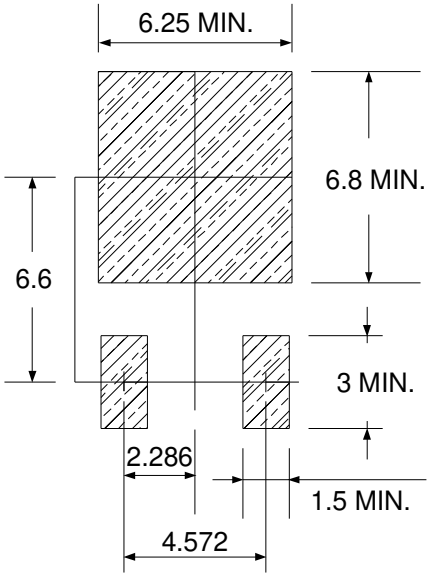
TO-252-2



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



UNIT: mm