

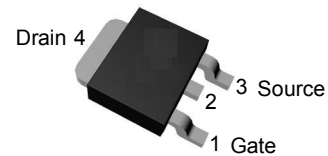
Features

- -60V/-90A,
 $R_{DS(ON)} = 10m\Omega(\text{typ.}) @ V_{GS} = -10V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- 100% UIS Tested

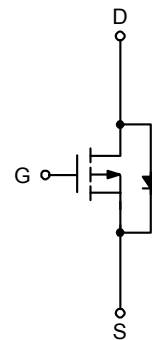
Applications

- Power Management in Desktop Computer or
DC/ DC Converters

Pin Description



Top View of TO-252-2



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
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	°C
I _S	Diode Continuous Forward Current		-40	A
I _{AS} ^a	Avalanche Current, Single pulse	L=1mH	-30	A
E _{AS} ^a	Avalanche Energy, Single pulse	L=1mH	450	mJ
I _{DP}	Pulse Drain Current Tested	T _C =25°C	-140 *	A
I _D	Continuous Drain Current	T _C =25°C	-90	
		T _C =100°C	-76	
P _D	Maximum Power Dissipation	T _C =25°C	132	W
		T _C =100°C	53	
R _{θJC}	Thermal Resistance-Junction to Case		0.95	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	

Note * : Current limited by bond wire.

Note a : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^{\circ}\text{C}$).

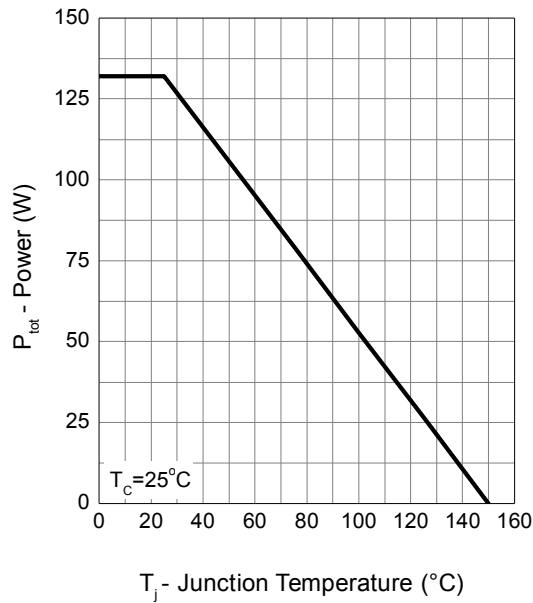
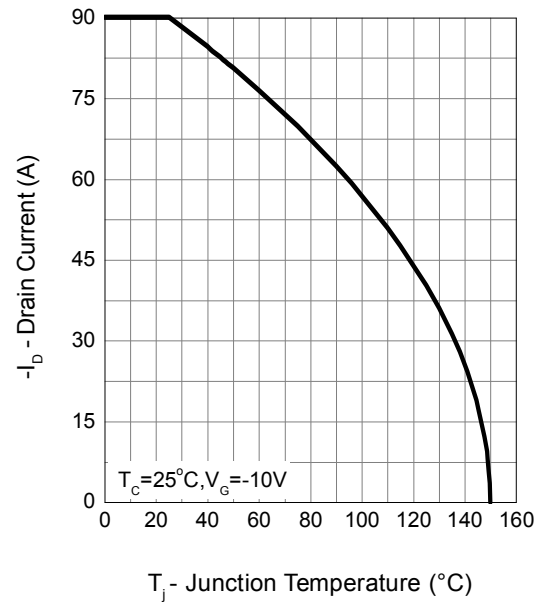
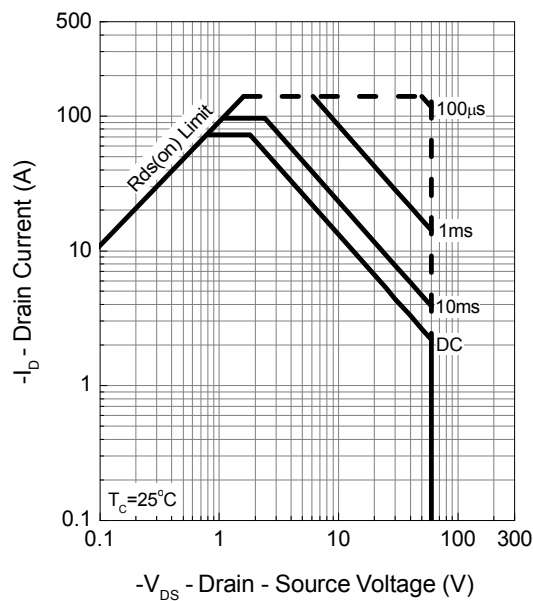
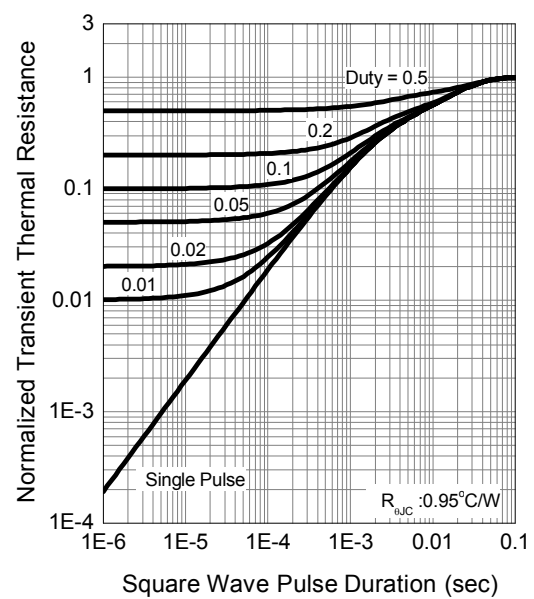
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

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	-2	-3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-25A	-	10	12.5	mΩ
Diode Characteristics						
V _{SD} ^b	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-25A, dI _{SD} /dt=100A/μs	-	35	-	ns
Q _{rr}	Reverse Recovery Charge		-	37	-	nC
Dynamic Characteristics ^c						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	2.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	4068	-	pF
C _{oss}	Output Capacitance		-	495	-	
C _{rss}	Reverse Transfer Capacitance		-	281	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	15	-	ns
t _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	119	-	
t _f	Turn-off Fall Time		-	60	-	
Gate Charge Characteristics ^c						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-25A	-	88	-	nC
Q _{gs}	Gate-Source Charge		-	12	-	
Q _{gd}	Gate-Drain Charge		-	21	-	

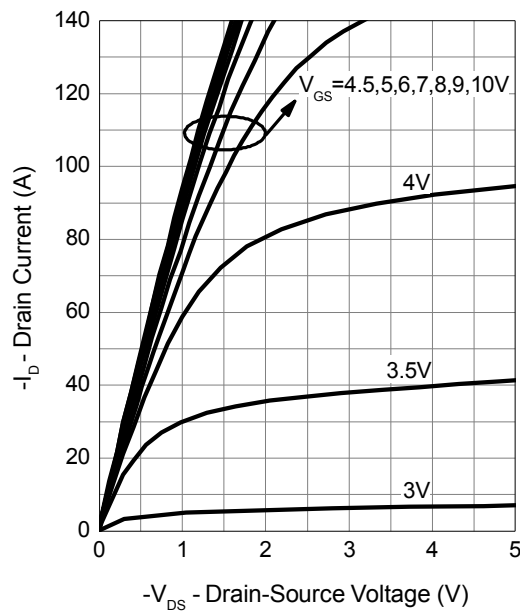
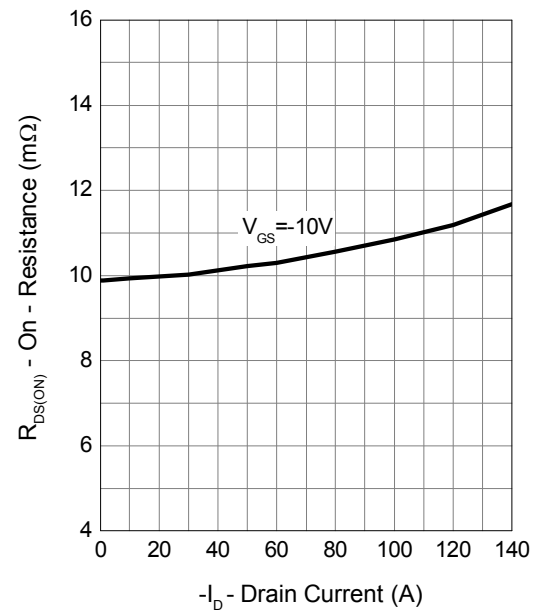
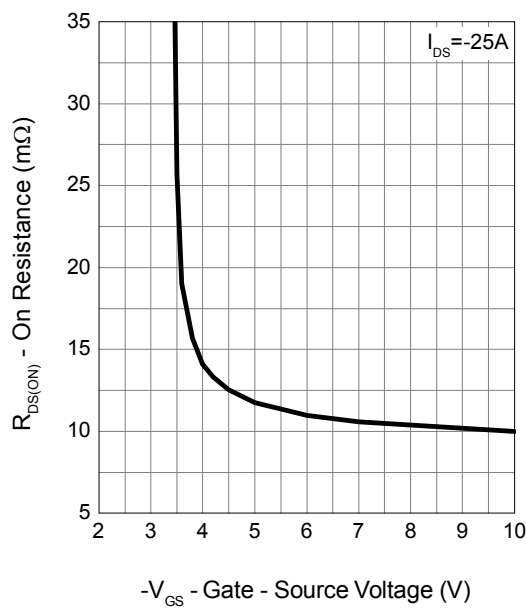
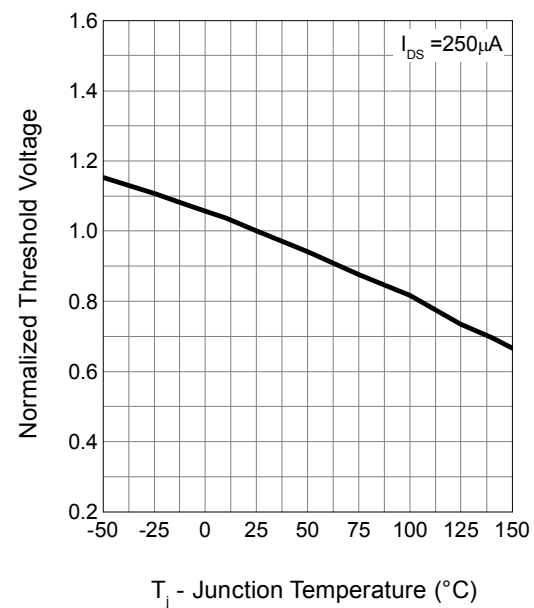
Note b : Pulse test; pulse width≤300μs, duty cycle≤2%.

Note c : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

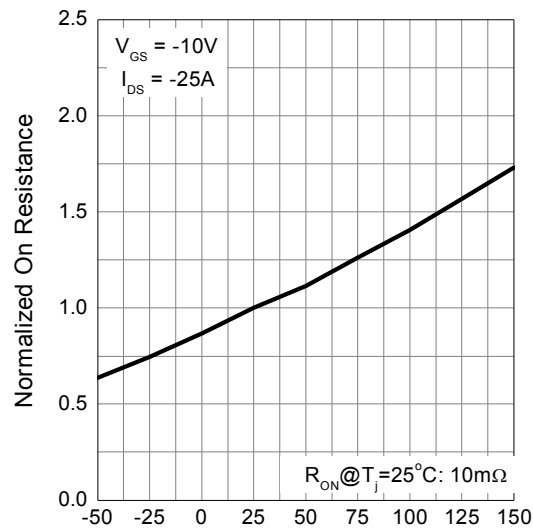
Power Dissipation

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


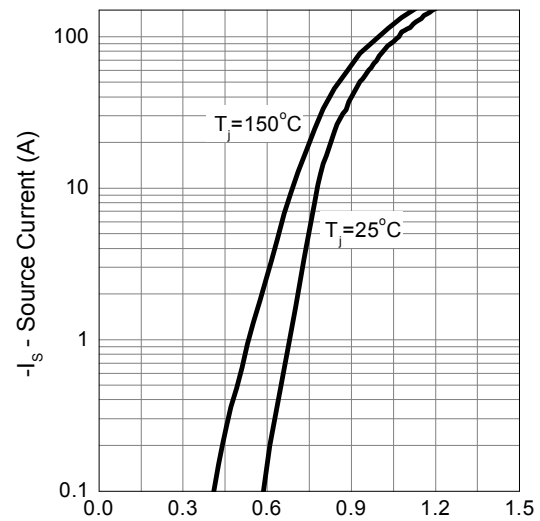
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance



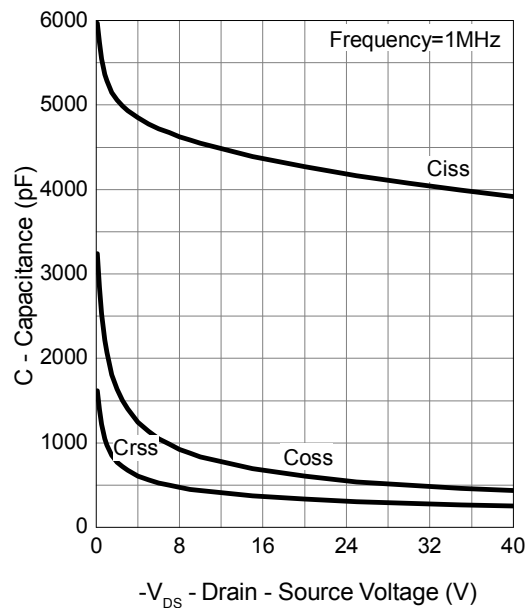
T_J - Junction Temperature (°C)

Source-Drain Diode Forward



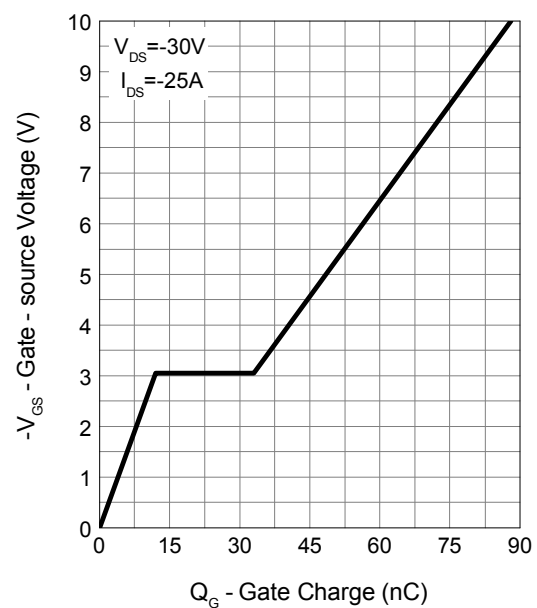
$-V_{SD}$ - Source - Drain Voltage (V)

Capacitance



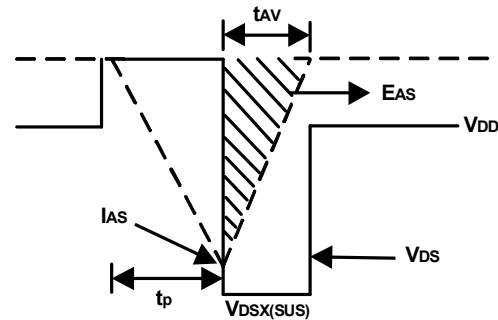
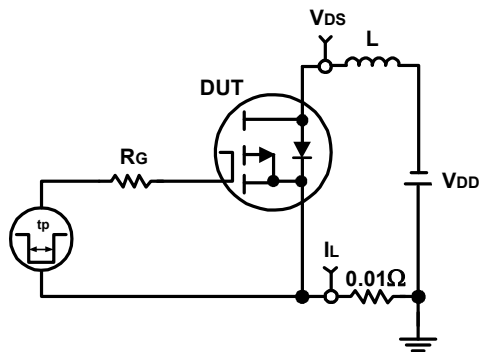
$-V_{DS}$ - Drain - Source Voltage (V)

Gate Charge

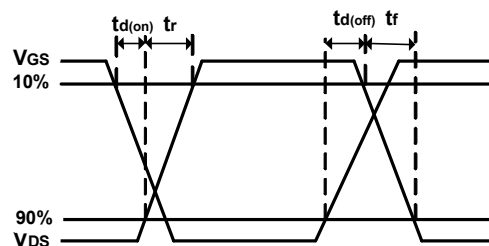
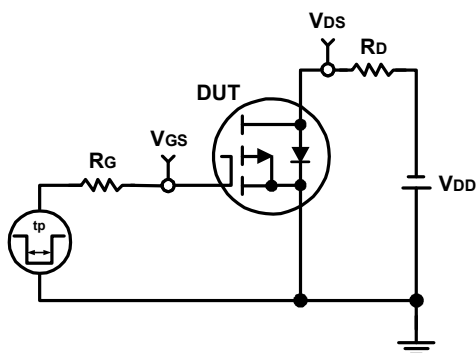


Q_G - Gate Charge (nC)

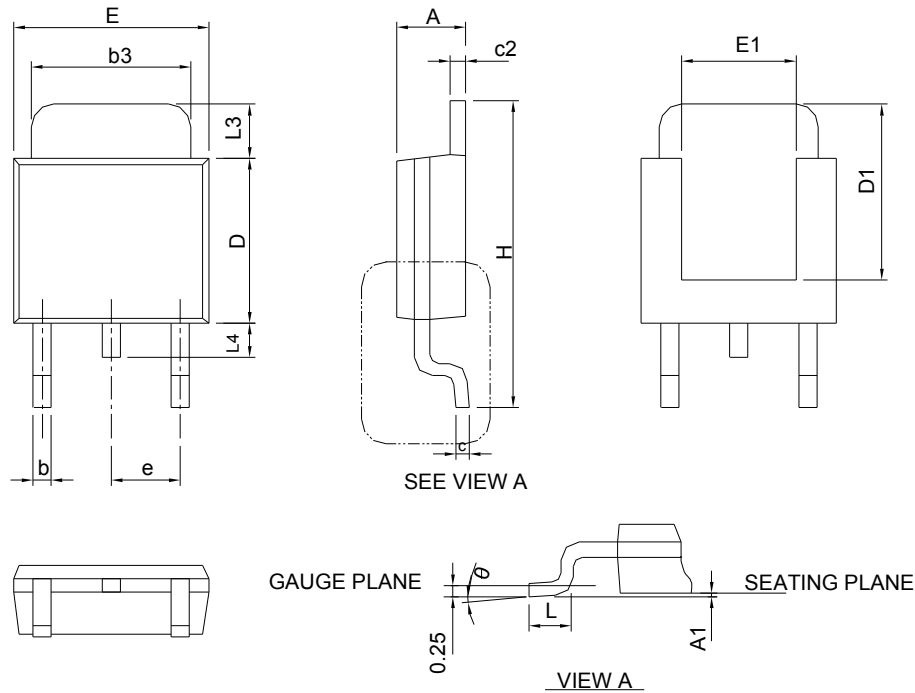
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



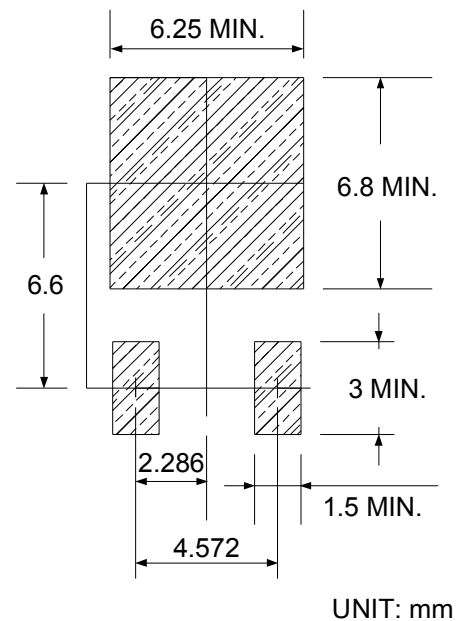
Package Information

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-252-2

RECOMMENDED LAND PATTERN



UNIT: mm