Features

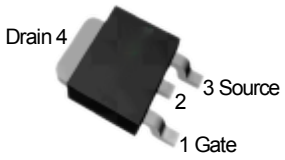
- 80V/80A,
  $R_{DS(ON)}$= 5.4mΩ (typ.) @ V_{GS}=10V
- Reliable and Rugged
- Lead Free and Green Devices Available
  (RoHS Compliant)

Applications

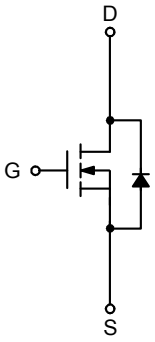
- High Efficiency Synchronous Rectification in SMPS.
- Uninterruptible Power Supply.
- High Speed Power Switching.
- Hard Switched and High Frequency Circuits.

.

Pin Description



Top View of TO-252-2



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		80	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	80	A
I_D	Continuous Drain Current	T_C=25°C	80	
		T_C=100°C	48	
I_{DM}	Pulsed Drain Current	T_C=25°C	320	
P_D	Maximum Power Dissipation	T_C=25°C	125	W
		T_C=100°C	50	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	1	°C/W
I_D	Continuous Drain Current	T_A=25°C	11	A
		T_A=70°C	9	
P_D	Maximum Power Dissipation	T_A=25°C	2	W
		T_A=70°C	1.25	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	Steady State	62.5	°C/W
I_{AS} [c]	Avalanche Current, Single pulse (L=0.5mH)		28	A
E_{AS} [c]	Avalanche Energy, Single pulse (L=0.5mH)		196	mJ

Note a：Bond wire current limit is 80A.

Note b：Pulse width limited by max. junction temperature.

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

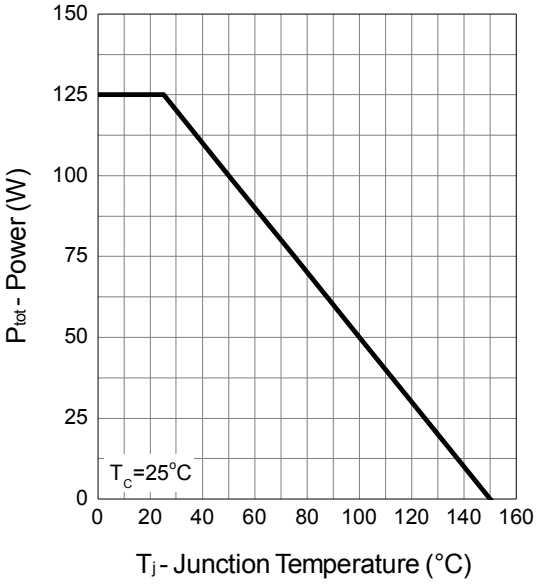
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=88V, 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}=±25V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=40A	-	5.4	6.5	mΩ
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V	-	0.8	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs	-	30	-	ns
Q_{rr}	Reverse Recovery Charge		-	32	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,f=1MHz	-	0.6	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	3000	3900	pF
C_{oss}	Output Capacitance		-	350	-	
C_{rss}	Reverse Transfer Capacitance		-	175	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	16	29	ns
t_r	Turn-on Rise Time		-	20	36	
$t_{d(OFF)}$	Turn-off Delay Time		-	47	85	
t_f	Turn-off Fall Time		-	35	63	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=40A	-	57	75	nC
Q_{gs}	Gate-Source Charge		-	15	-	
Q_{gd}	Gate-Drain Charge		-	16	-	

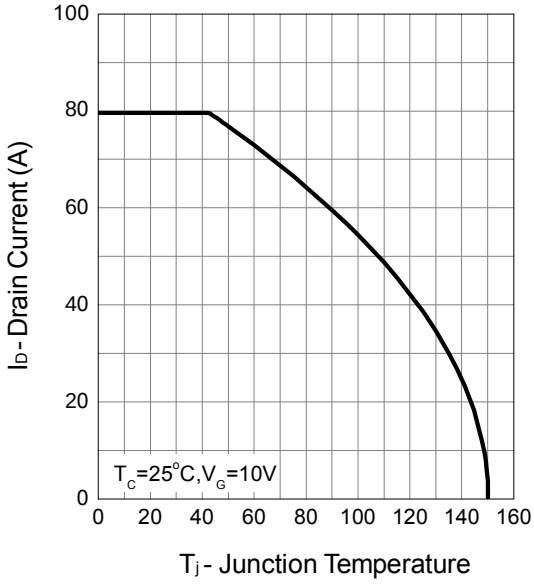
Note d Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

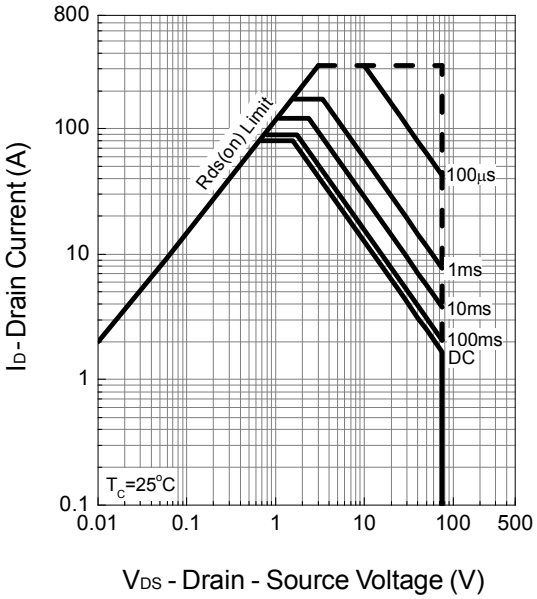
Power Dissipation



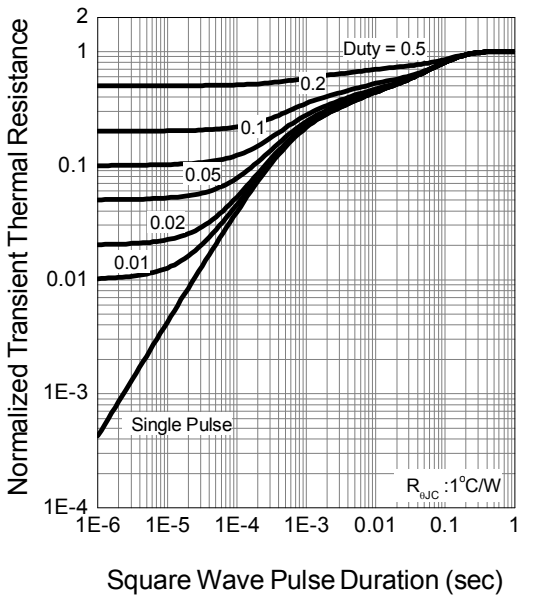
Drain Current



Safe Operation Area

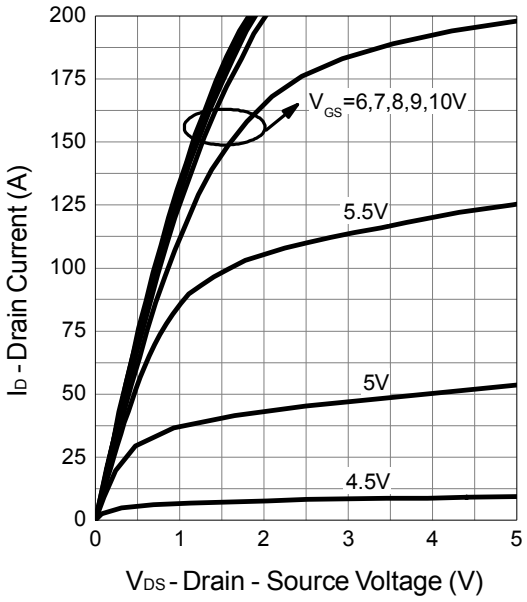


Thermal Transient Impedance

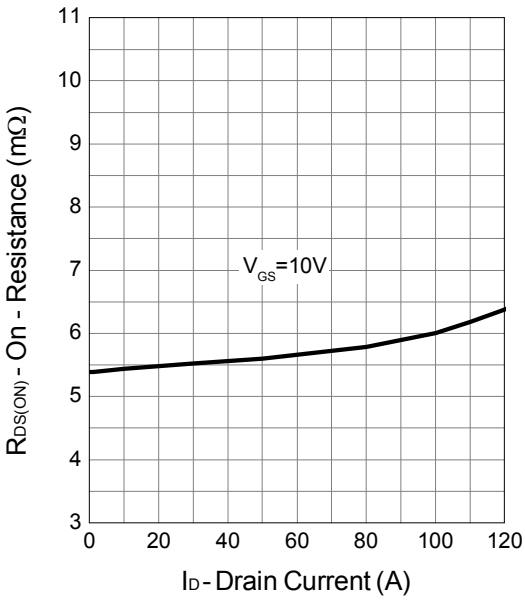


Typical Operating Characteristics (Cont.)

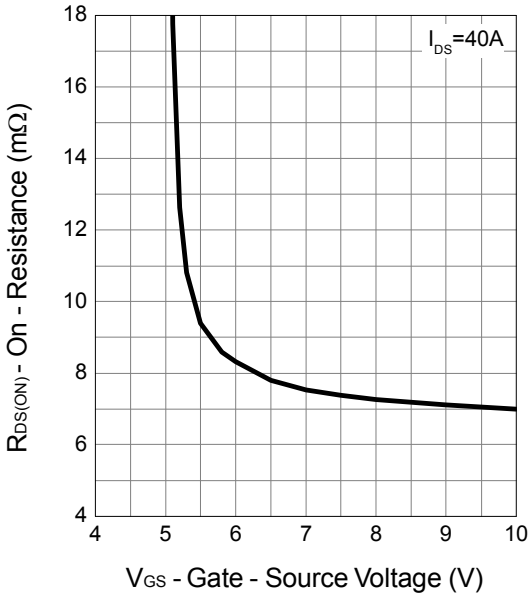
Output Characteristics



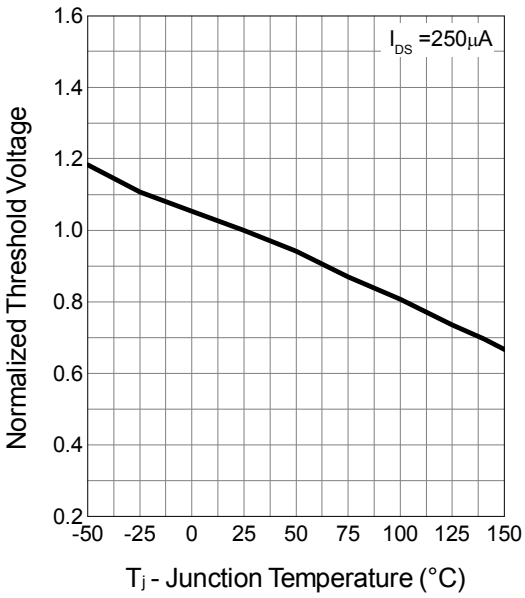
Drain-Source On Resistance



Gate-Source On Resistance

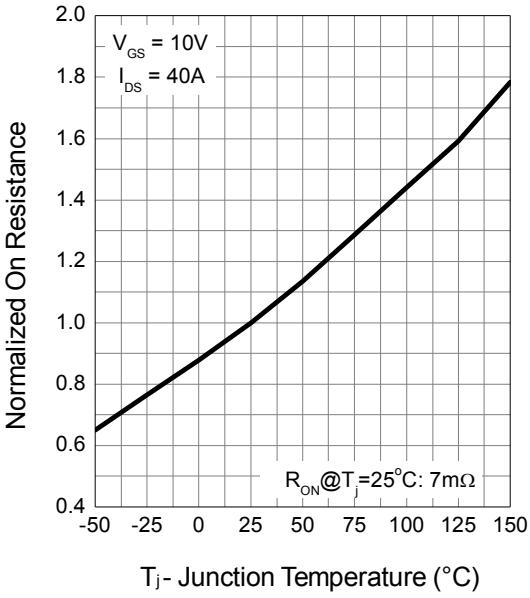


Gate Threshold Voltage

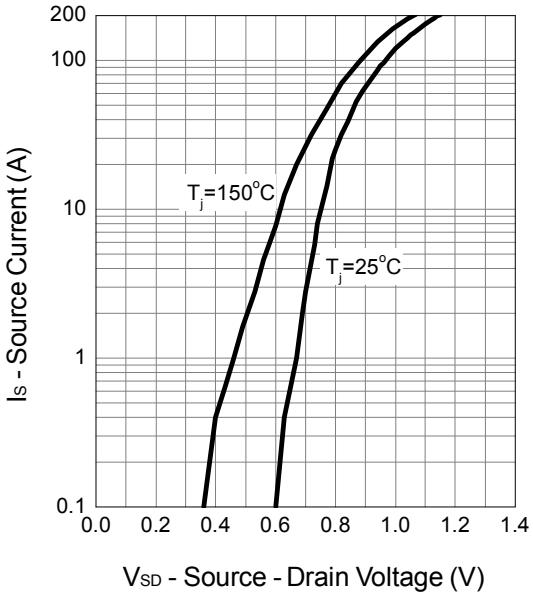


Typical Operating Characteristics (Cont.)

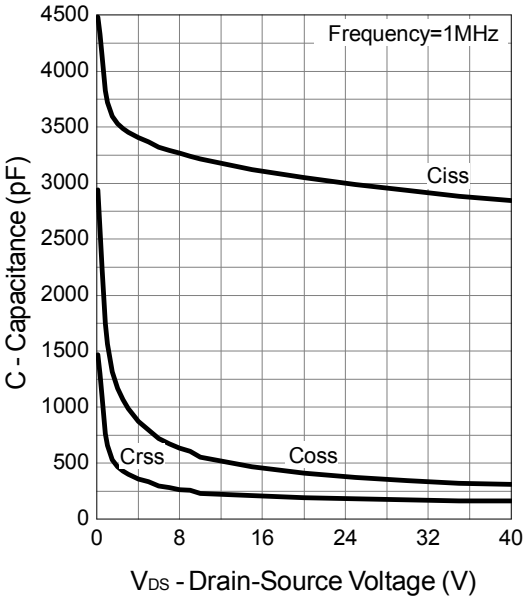
Drain-Source On Resistance



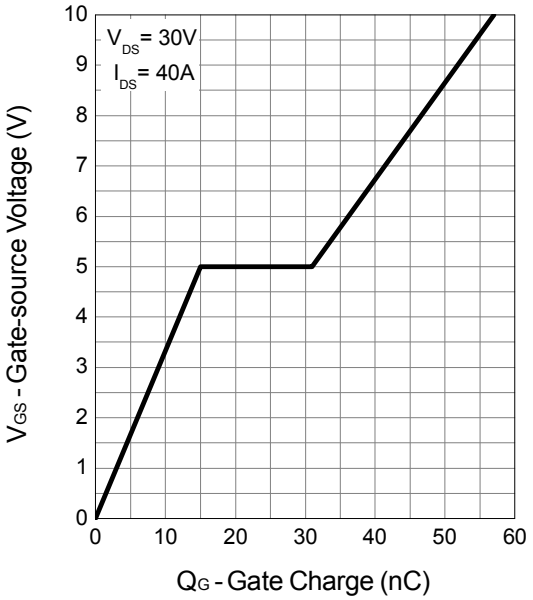
Source-Drain Diode Forward



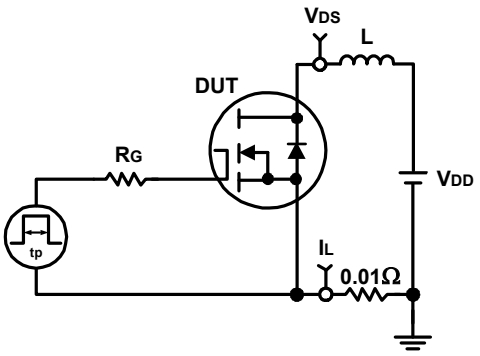
Capacitance

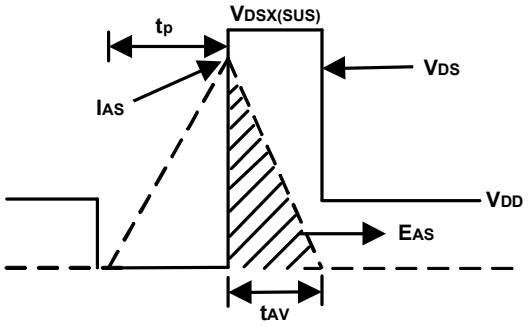


Gate Charge

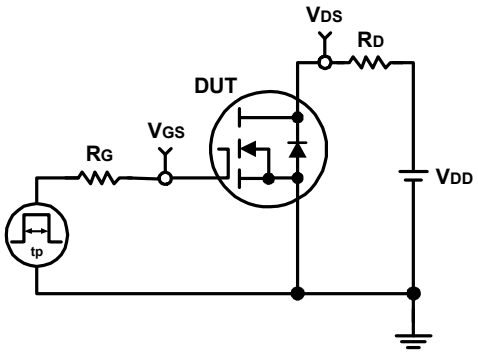


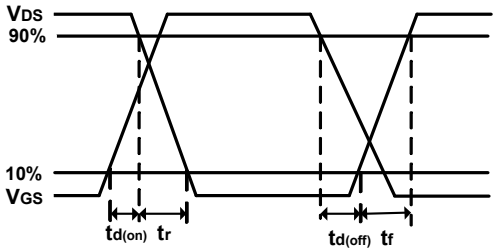
Avalanche Test Circuit and Waveforms





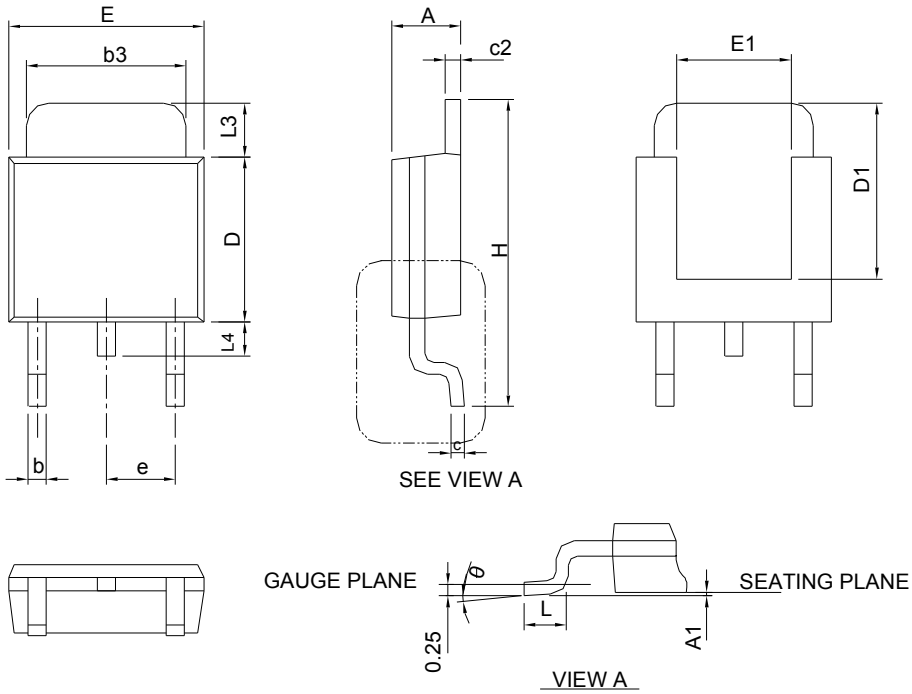
Switching Time Test Circuit and Waveforms





Package Information

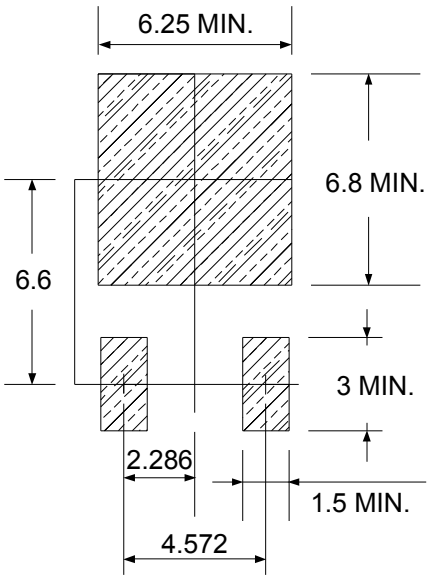
TO-252-2



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-252-2 .

RECOMMENDED LAND PATTERN



UNIT: mm