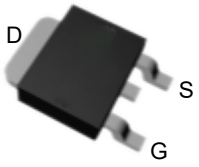
Features

- 80V/80A*
  $R_{DS(ON)}$=5.5mΩ(typ.)@V_{GS}=10V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)

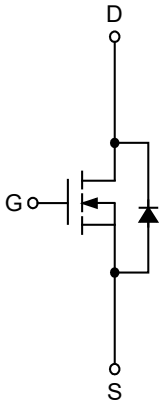
Applications

- Power Management for SMPS synchronous rectification.
- Mobile USB-PD and quick charge adaptor.

Pin Description



TO-252-2



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		80	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	50	A
I_D	Continuous Drain Current	T_C=25°C	80*	A
		T_C=100°C	63	A
		T_C=25°C	300 [a]	A
I_{DM}	Pulsed Drain Current	T_C=25°C	104	W
P_D	Maximum Power Dissipation	T_C=100°C	41.6	W
		Steady State	1.2	°C/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	T_A=25°C	15.4	A
I_D	Continuous Drain Current	T_A=70°C	12.3	A
		T_A=25°C	2.5	W
P_D	Maximum Power Dissipation	T_A=70°C	1.6	W
		Steady State	50	°C/W
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	L=0.5mH	29	A
I_{AS} [c]	Avalanche Current, Single pulse	L=0.5mH	210	mJ
E_{AS} [c]	Avalanche Energy, Single pulse			

Note * : Current limited by bonding wire.
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 (initial temperature T_j=25°C).

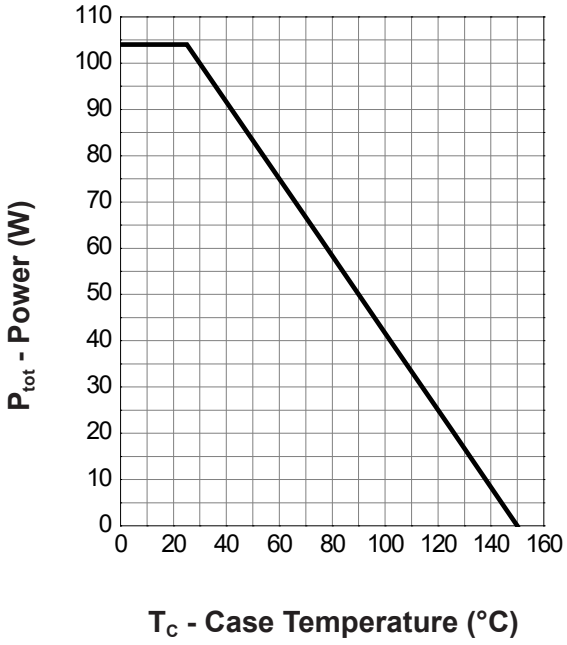
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=64V, 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}=40A	-	5.5	6.7	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	-	46	-	ns
Q_{rr}	Reverse Recovery Charge		-	65	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Frequency=1.0MHz	-	2120	2680	pF
C_{oss}	Output Capacitance		-	240	-	
C_{rss}	Reverse Transfer Capacitance		-	50	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	21	38	ns
t_r	Turn-on Rise Time		-	9	16	
$t_{d(OFF)}$	Turn-off Delay Time		-	72	130	
t_f	Turn-off Fall Time		-	67	121	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=40V, V_{GS}=4.5V, I_{DS}=40A	-	28	-	nC
Q_g	Total Gate Charge	V_{DS}=40V, V_{GS}=10V, I_{DS}=40A	-	62	87	
Q_{gs}	Gate-Source Charge		-	14.4	-	
Q_{gd}	Gate-Drain Charge		-	8.4	-	

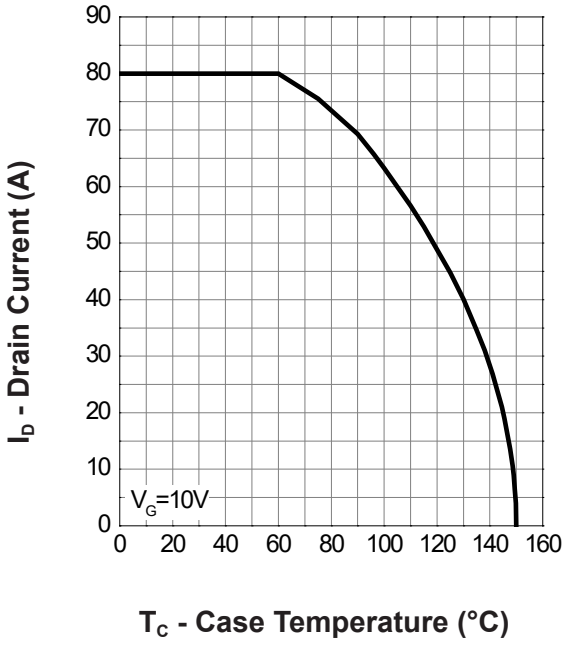
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

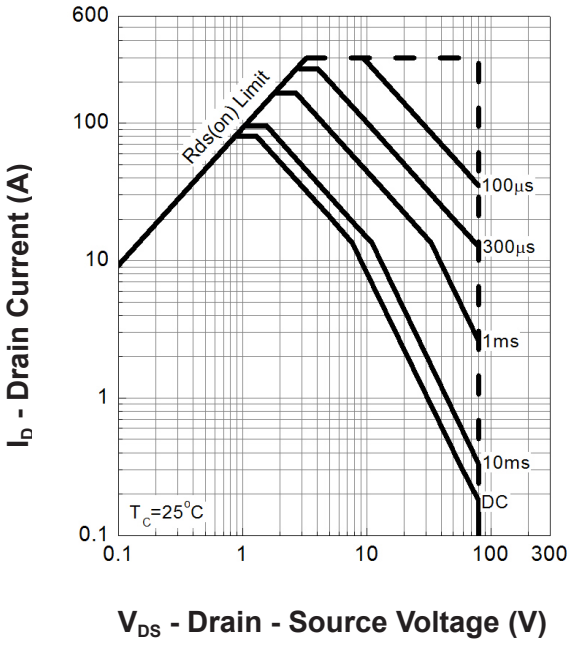
Power Dissipation



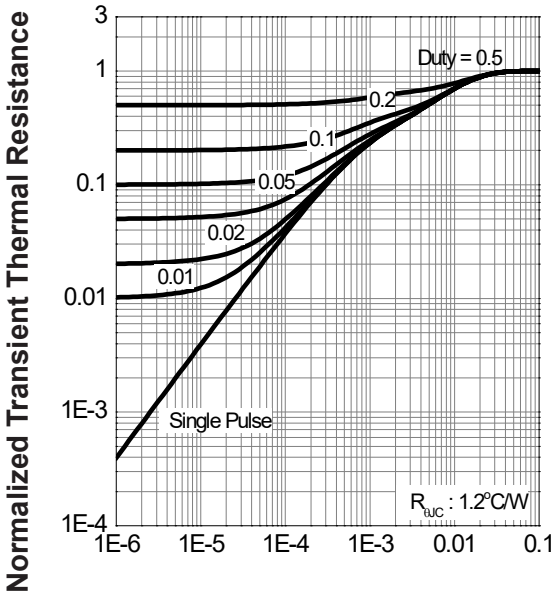
Drain Current



Safe Operation Area

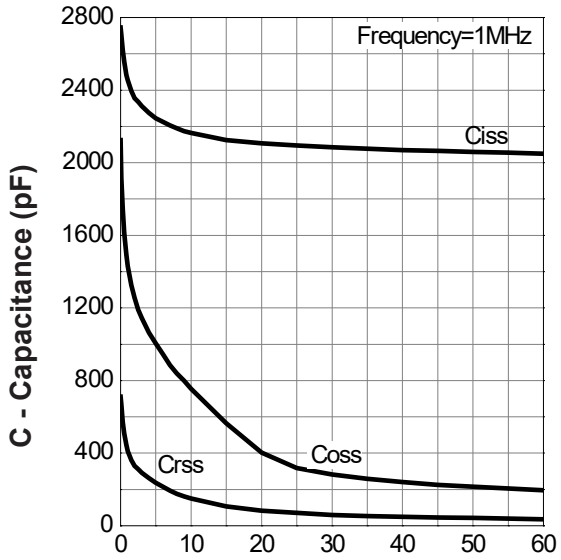


Thermal Transient Impedance

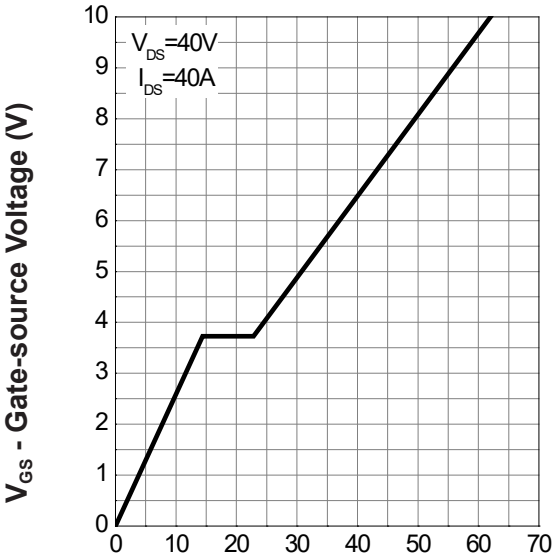


Typical Operating Characteristics(Cont.)

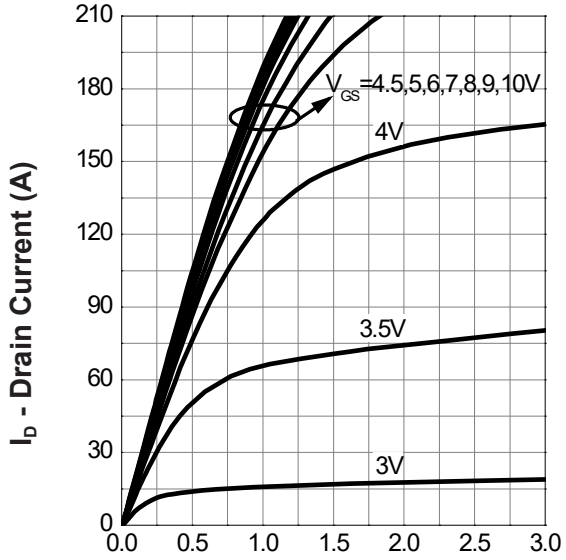
Capacitance



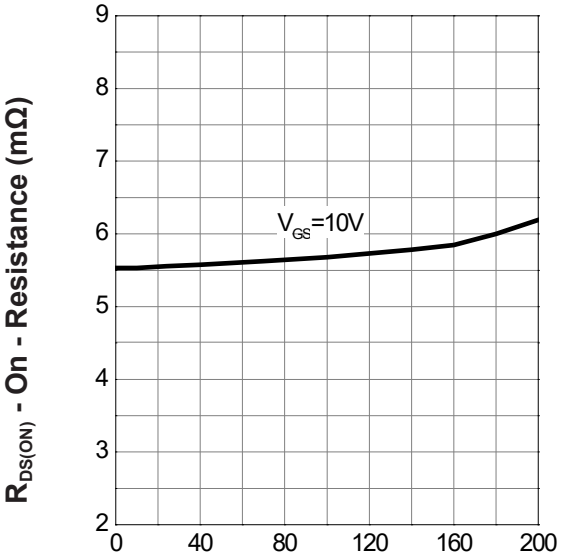
Gate Charge



Output Characteristics

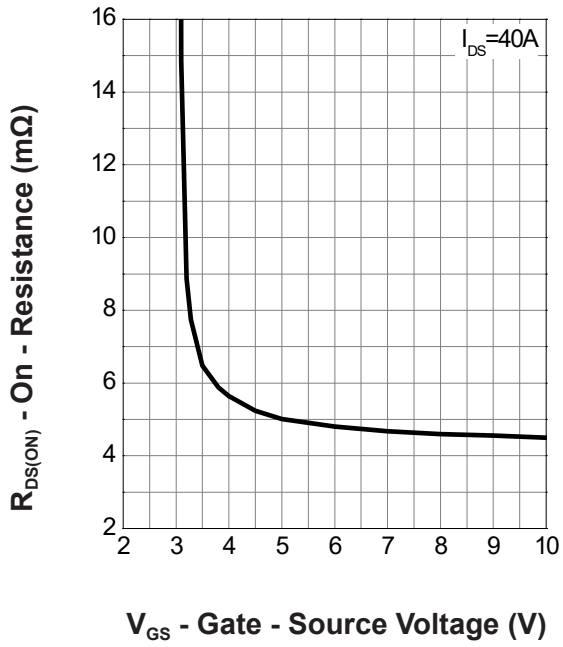


Drain-Source On Resistance

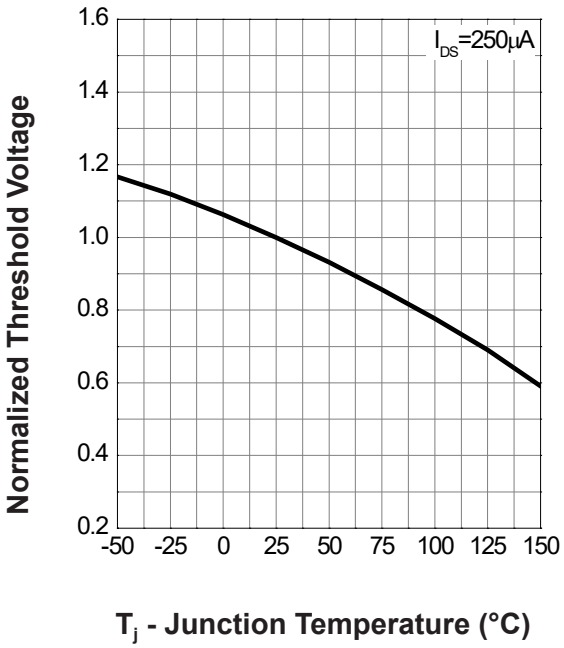


Typical Operating Characteristics(Cont.)

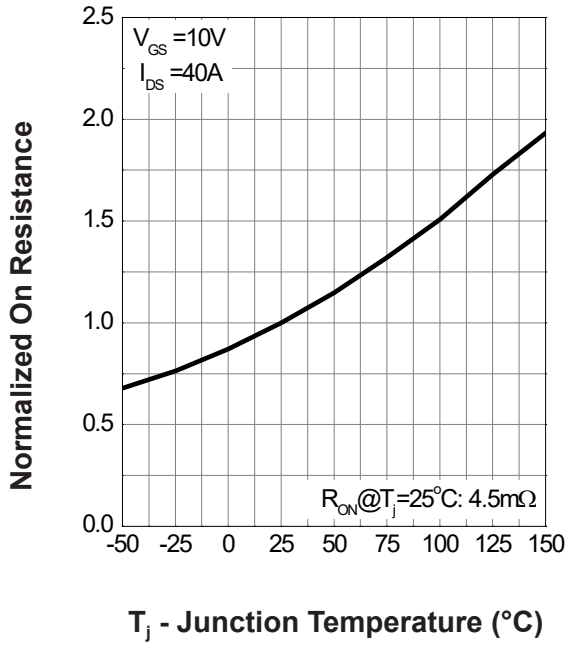
Gate-Source On Resistance



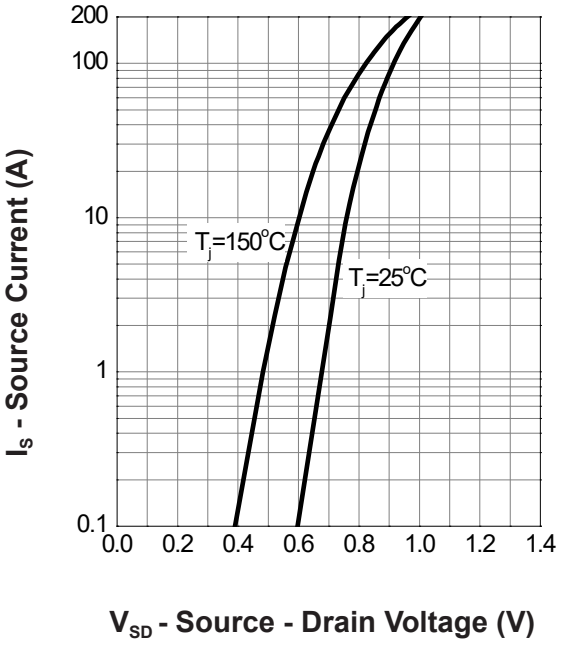
Gate Threshold Voltage



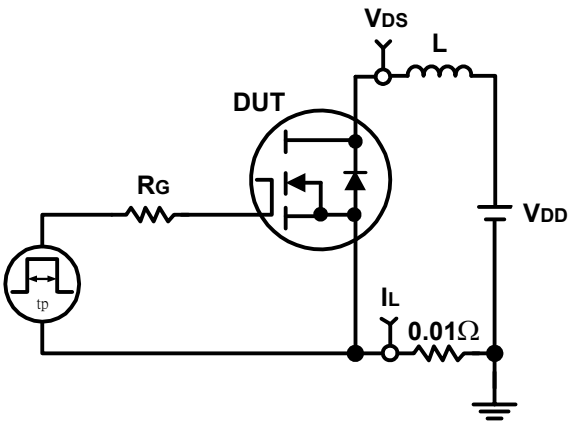
Drain-Source On Resistance

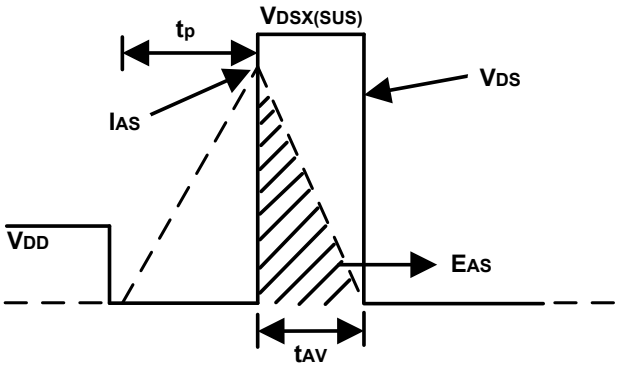


Source-Drain Diode Forward

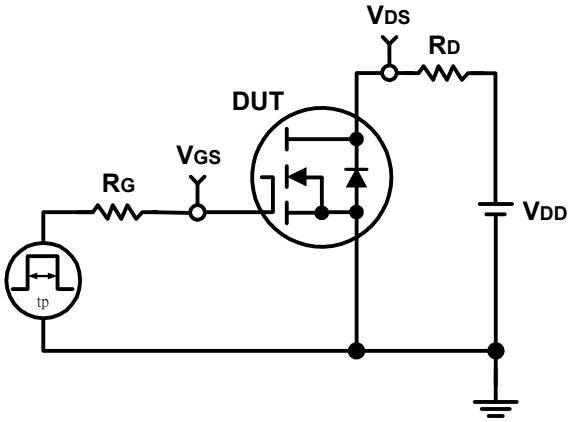


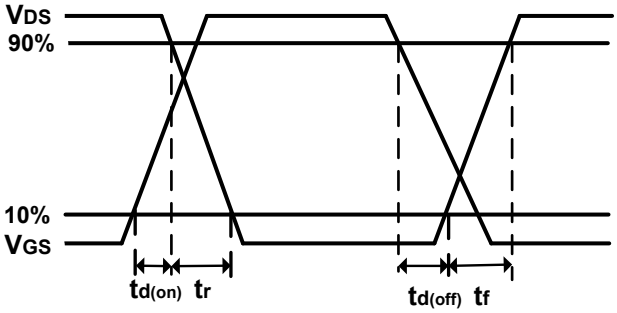
Avalanche Test Circuit and Waveforms



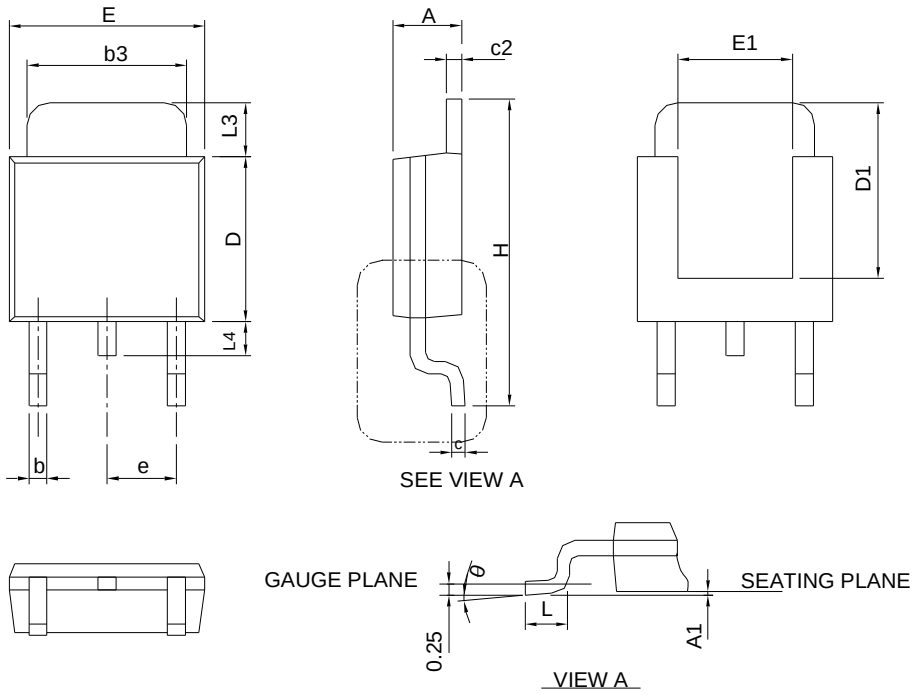


Switching Time Test Circuit and Waveforms





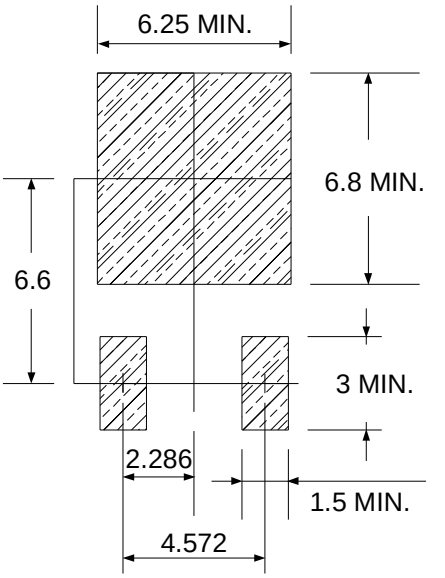
Package Information



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-252-2

RECOMMENDED LAND PATTERN



UNIT: mm