RU7570L

N-Channel Advanced Power MOSFET

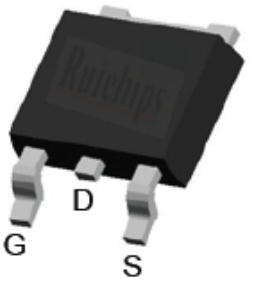
Features

- 75V/70A,
  $R_{DS(ON)}$ =9mΩ(Typ.)@V_{GS}=10V
- Super High Dense Cell Design
- Fast Switching and Fully Avalanche Rated
- Reliable and Rugged
- 100% avalanche tested
- Lead Free and Green Devices Available
  (RoHS Compliant)

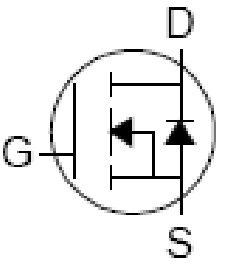
Applications

- High Speed Power Switching

Pin Description



TO252



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		75	V
V_{GSS}	Gate-Source Voltage		±25	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	70②	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_C=25°C	280①	A
I_D	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	70②	A
		T_C=100°C	51	
P_D	Maximum Power Dissipation	T_C=25°C	103	W
		T_C=100°C	52	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.45	°C/W
Drain-Source Avalanche Ratings				
E_{AS}③	Avalanche Energy, Single Pulsed		169	mJ

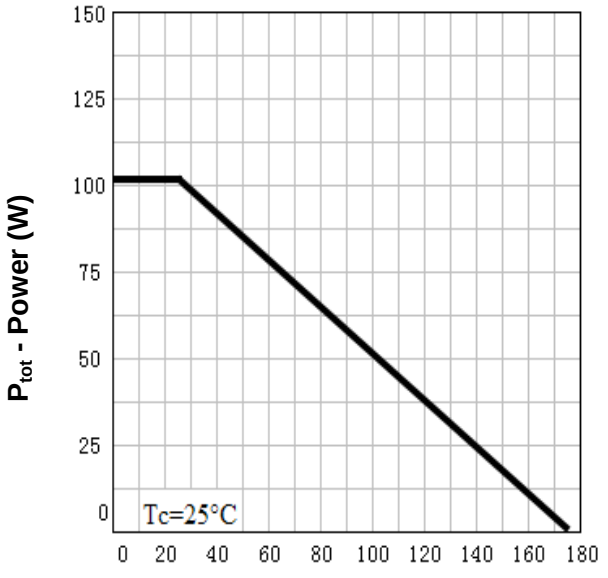
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU7570L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	75			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 75V, 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
$R_{DS(ON)}$ ④	Drain-Source On-state Resistance	V_{GS}= 10V, I_{DS}=35A		9	12	mΩ
Diode Characteristics						
V_{SD} ④	Diode Forward Voltage	I_{SD}=35A, V_{GS}=0V			1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=35A, dI_{SD}/dt=100A/μs		38		ns
Q_{rr}	Reverse Recovery Charge			45		nC
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		2.0		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Frequency=1.0MHz		2850		pF
C_{oss}	Output Capacitance			320		
C_{rss}	Reverse Transfer Capacitance			150		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=40V, R_L=1.2Ω, I_{DS}=35A, V_{GEN}= 10V, R_G=4.7Ω		27		ns
t_r	Turn-on Rise Time			32		
$t_{d(OFF)}$	Turn-off Delay Time			93		
t_f	Turn-off Fall Time			68		
Gate Charge Characteristics ⑤						
Q_g	Total Gate Charge	V_{DS}=60V, V_{GS}= 10V, I_{DS}=35A		68		nC
Q_{gs}	Gate-Source Charge			12		
Q_{gd}	Gate-Drain Charge			23		

Notes: ①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 60A.
③Limited by T_{Jmax}, I_{AS} =26A, V_{DD} = 48V, R_G = 50Ω , Starting T_J = 25°C.
④Pulse test ; Pulse width≤300μs, duty cycle≤2%.
⑤Guaranteed by design, not subject to production testing.

Typical Characteristics

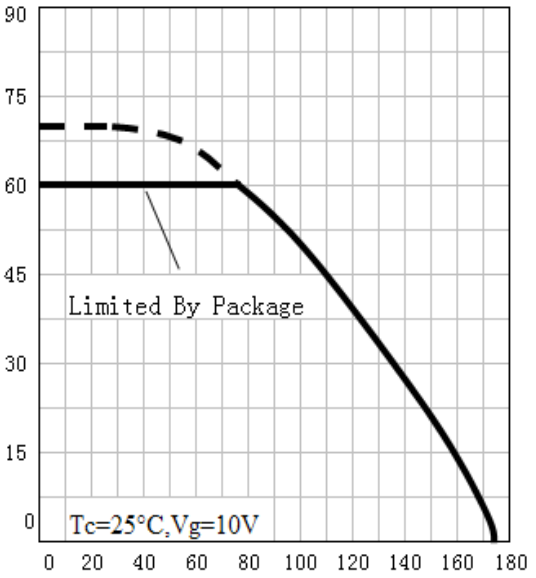
Power Dissipation



P_{tot} - Power (W)

T_j - Junction Temperature (°C)

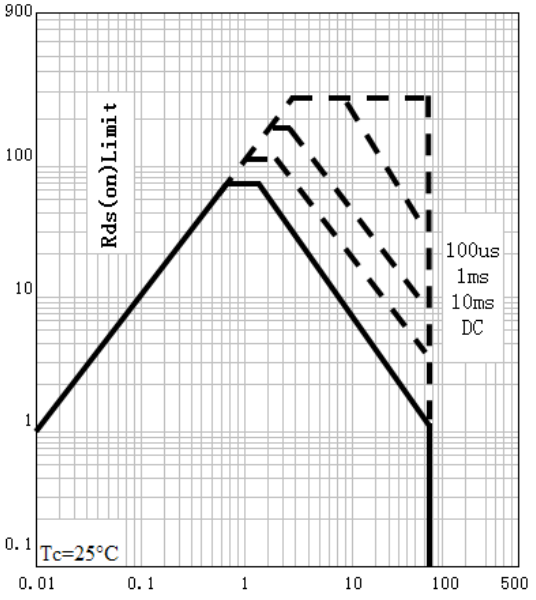
Drain Current



I_D - Drain Current (A)

T_j - Junction Temperature (°C)

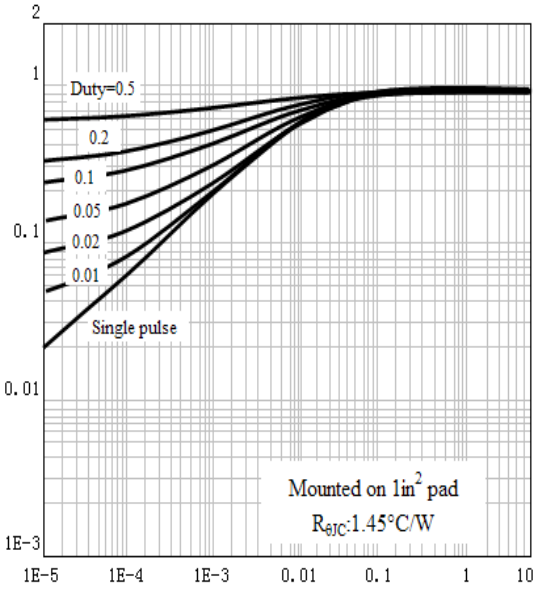
Safe Operation Area



I_D - Drain Current (A)

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

Thermal Transient Impedance

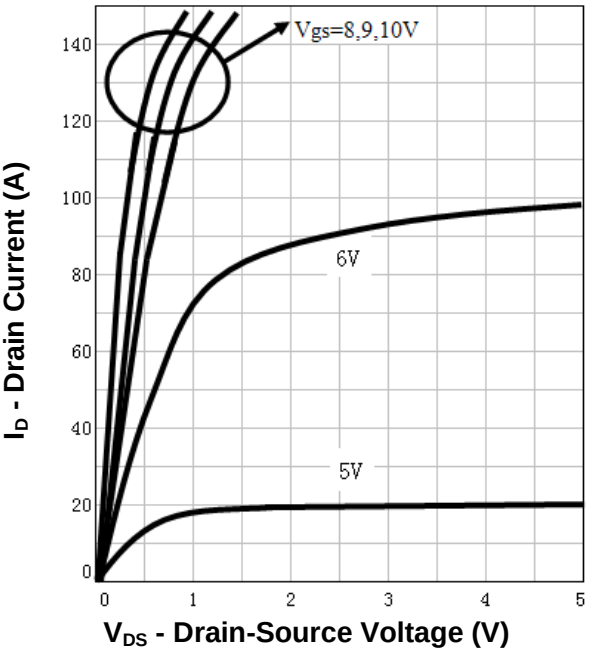


Normalized Effective Transient

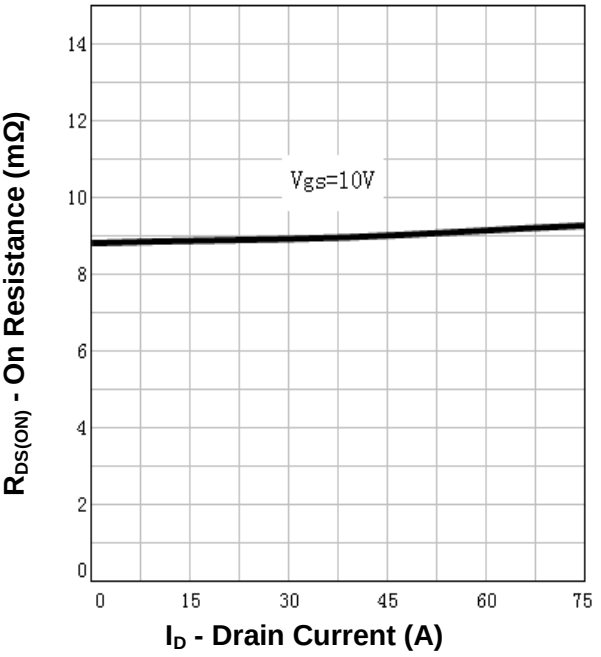
Square Wave Pulse Duration (sec)

Typical Characteristics

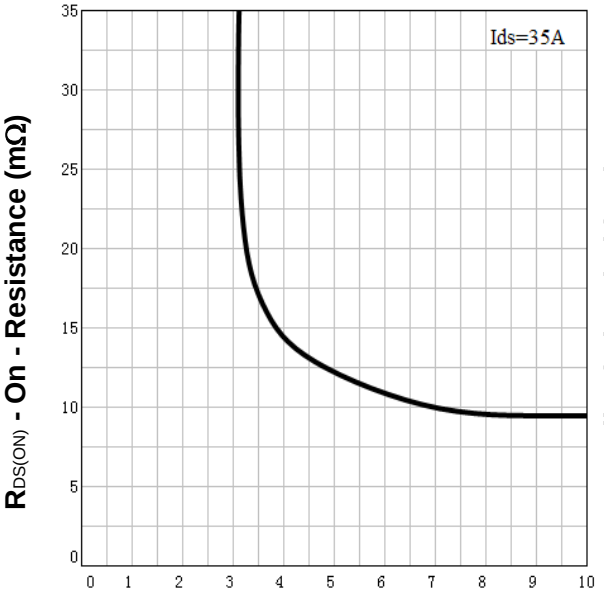
Output Characteristics



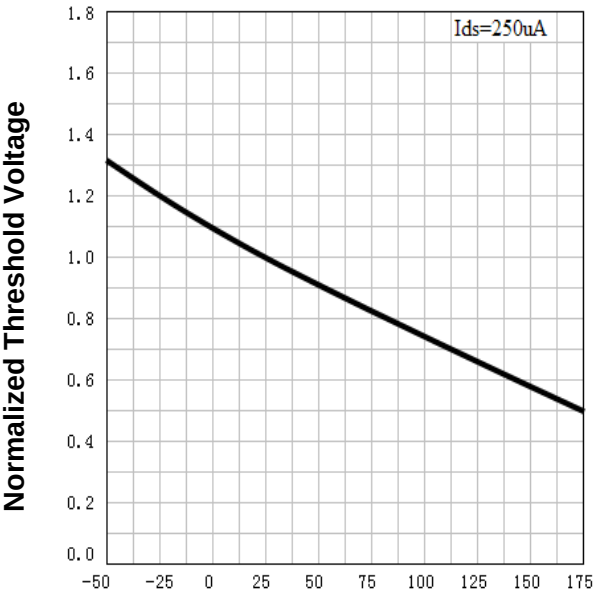
Drain-Source On Resistance



Drain-Source On Resistance

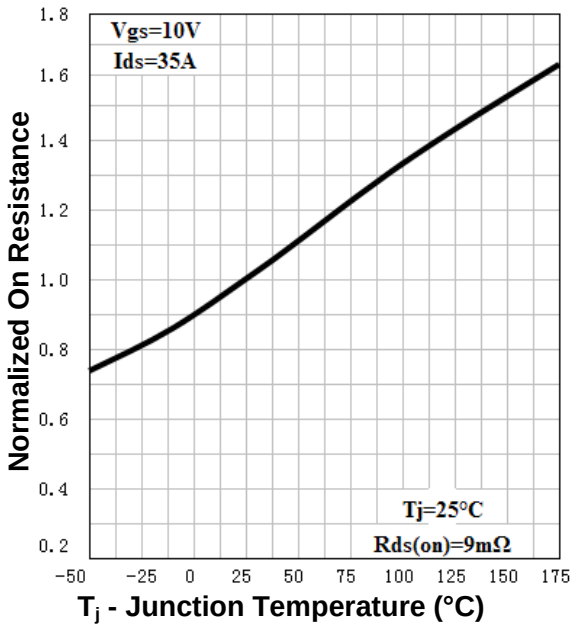


Gate Threshold Voltage

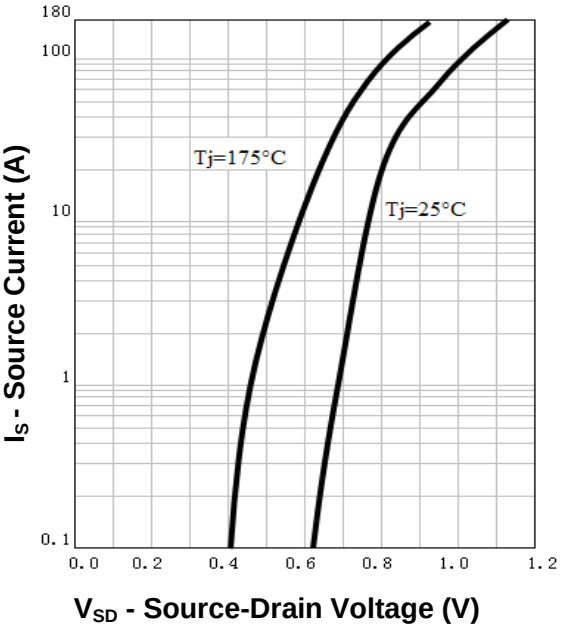


Typical Characteristics

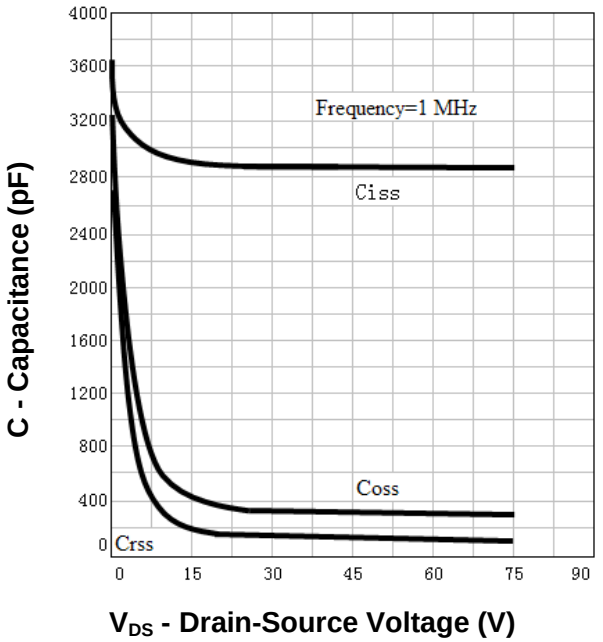
Drain-Source On Resistance



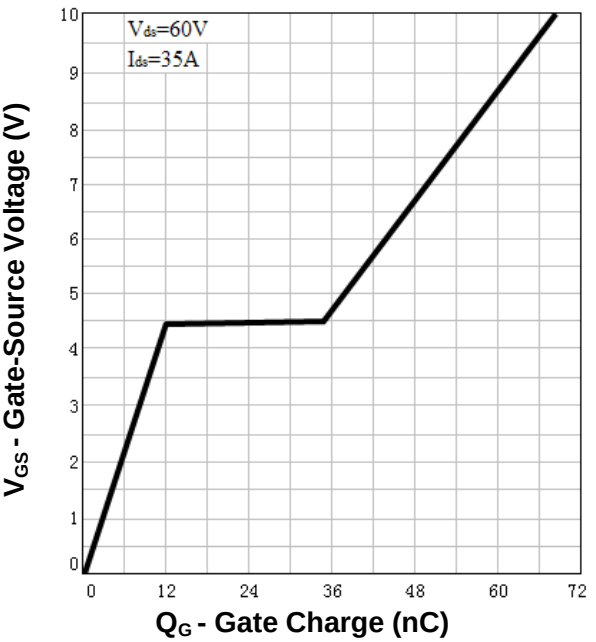
Source-Drain Diode Forward



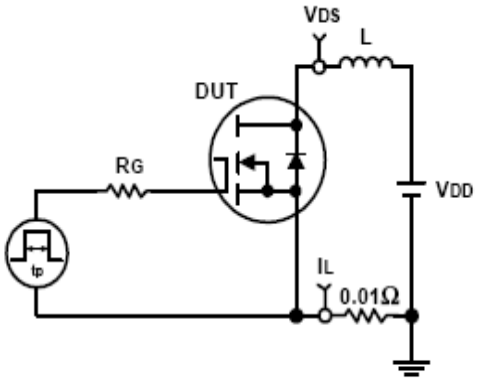
Capacitance

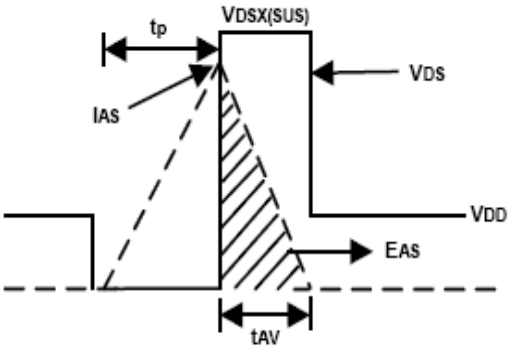


Gate Charge

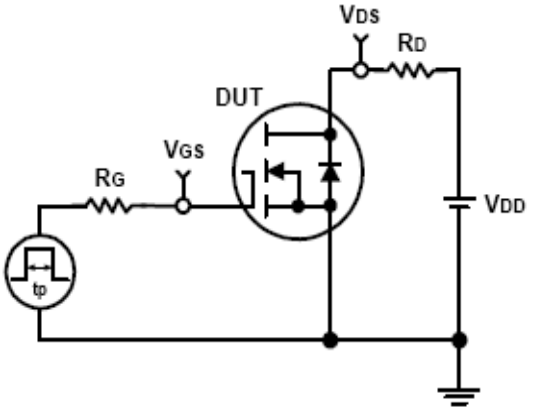


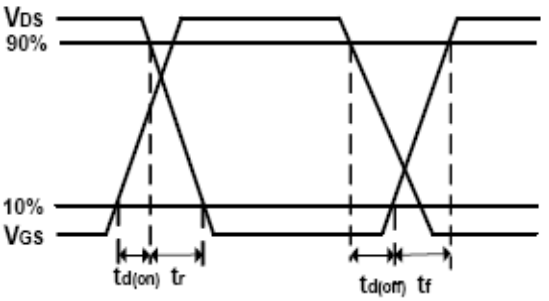
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms



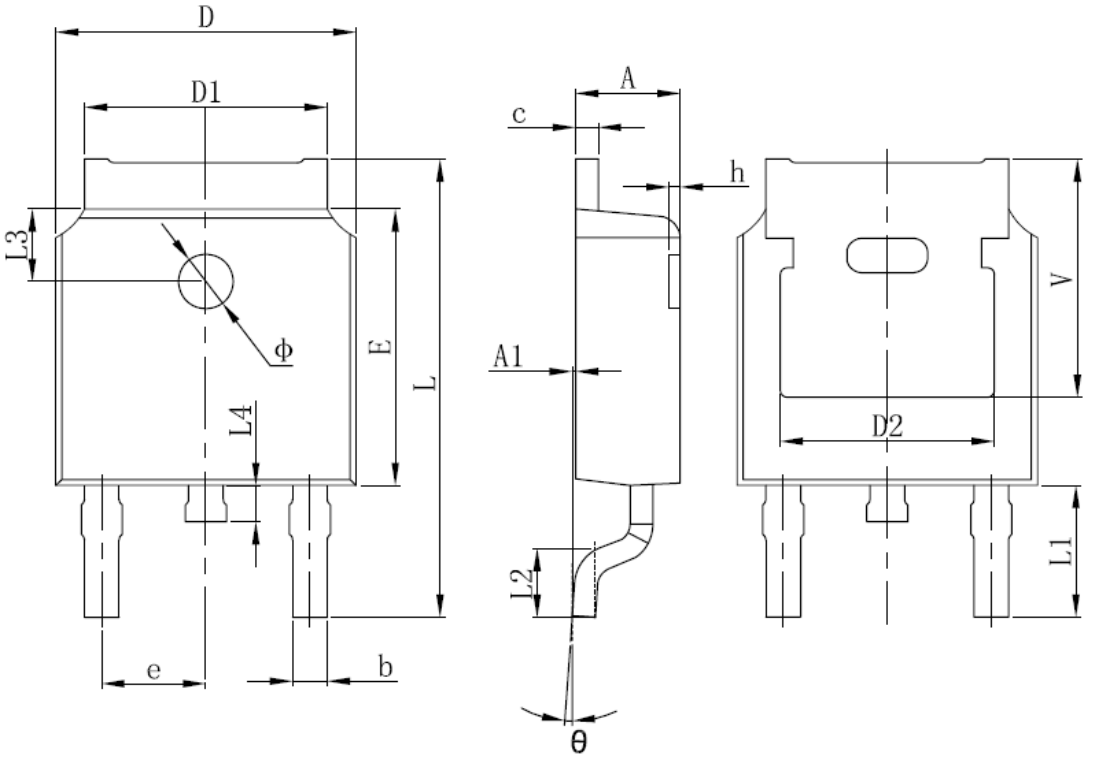


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU7570L	RU7570L	TO-252	Tape&Reel	2500	13''	16mm

Package Information

TO252-2L



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	2.200	2.400	0.087	0.094	L	9.800	10.400	0.386	0.409
A1	0.000	0.127	0.000	0.005	L1	2.900 REF.		0.114 REF.	
b	0.660	0.860	0.026	0.034	L2	1.400	1.700	0.055	0.067
C	0.460	0.580	0.018	0.023	L3	1.600 REF.		0.063REF.	
D	6.500	6.700	0.256	0.264	L4	0.600	1.000	0.024	0.039
D1	5.100	5.460	0.201	0.215	Φ	1.100	1.300	0.043	0.051
D2	4.830 REF.		0.190 REF.		θ	0°	8°	0°	8°
E	6.000	6.200	0.236	0.244	h	0.000	0.300	0.000	0.012
e	2.186	2.386	0.086	0.094	V	5.350 REF.		0.211 REF.	

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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