

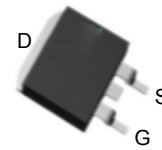
Features

- 85V/128A
 $R_{DS(ON)}=5.3m\Omega(typ.)@V_{GS}=10V$
- 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)

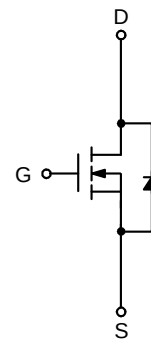
Applications

- Power Management for SMPS.
- DC-DC Converter.

Pin Description



Top View of TO-263



N-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		85	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	128	A
I _D	Continuous Drain Current	T _C =25°C	128	
	Continuous Drain Current	T _C =100°C	55	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	384	
P _D	Maximum Power Dissipation	T _C =25°C	125	W
		T _C =100°C	50	
R _{θJC}	Thermal Resistance-Junction to Case		1	°C/W
I _D	Continuous Drain Current	T _A =25°C	11	A
		T _A =70°C	8.8	
P _D	Maximum Power Dissipation	T _A =25°C	2	W
		T _A =70°C	1.28	
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	52	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	676	mJ

Note a : Pulse width limited by maximum junction temperature.

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

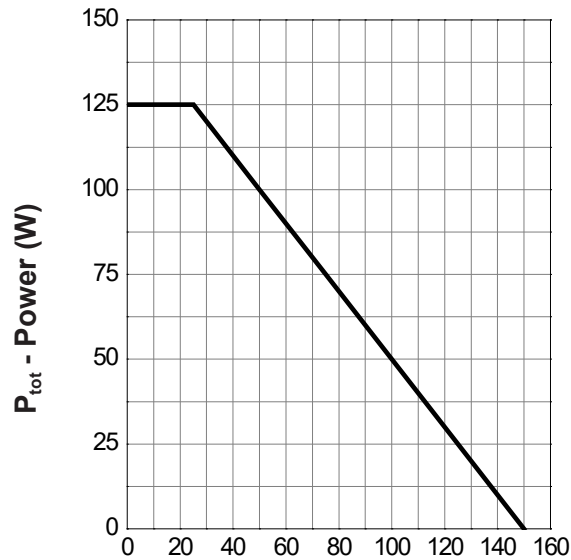
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

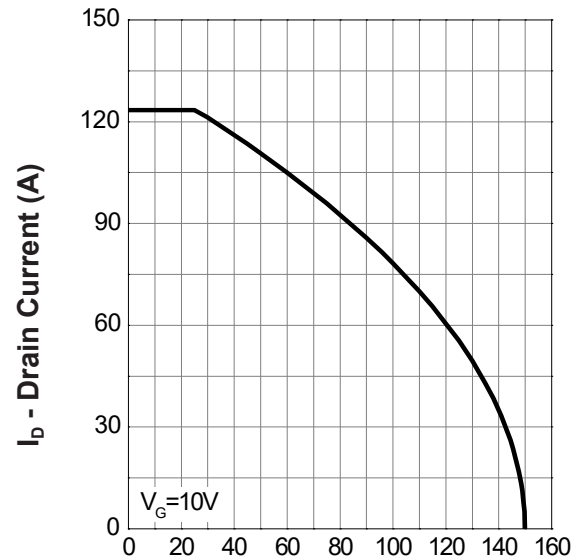
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	85	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =68V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =40A	-	5.3	6.8	mΩ
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.8	1.3	V
t _{rr} ^d	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs	-	50	-	ns
Q _{rr} ^d	Reverse Recovery Charge		-	100	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz	-	6930	7320	pF
C _{oss}	Output Capacitance		-	460	-	
C _{rss}	Reverse Transfer Capacitance		-	254	-	
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		-	10	18	
t _{d(OFF)}	Turn-off Delay Time		-	41	74	
t _f	Turn-off Fall Time		-	75	135	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =40A	-	40	56	nC
Q _{gs}	Gate-Source Charge		-	12	-	
Q _{gd}	Gate-Drain Charge		-	9	-	

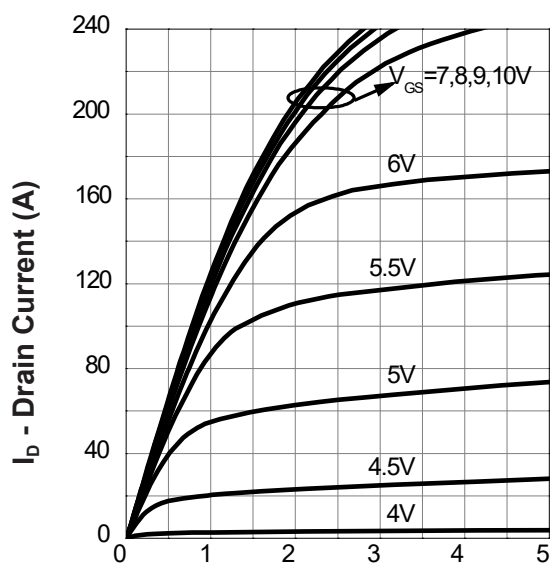
Note c : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

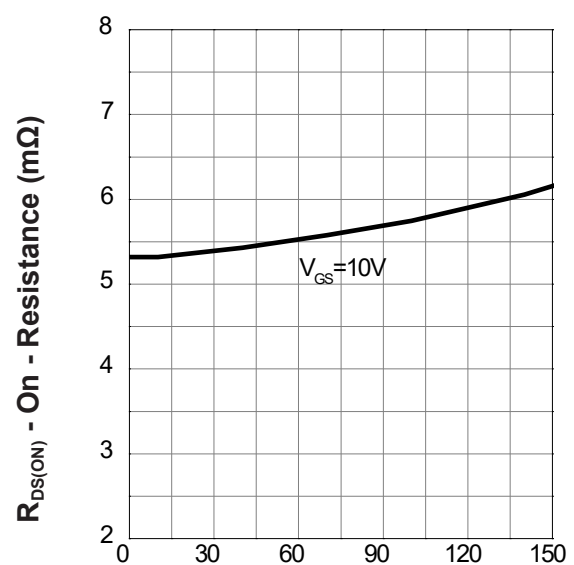
Note d : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

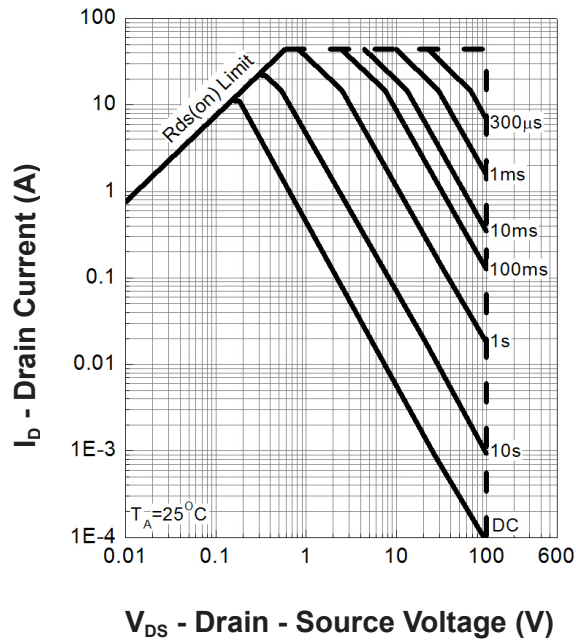
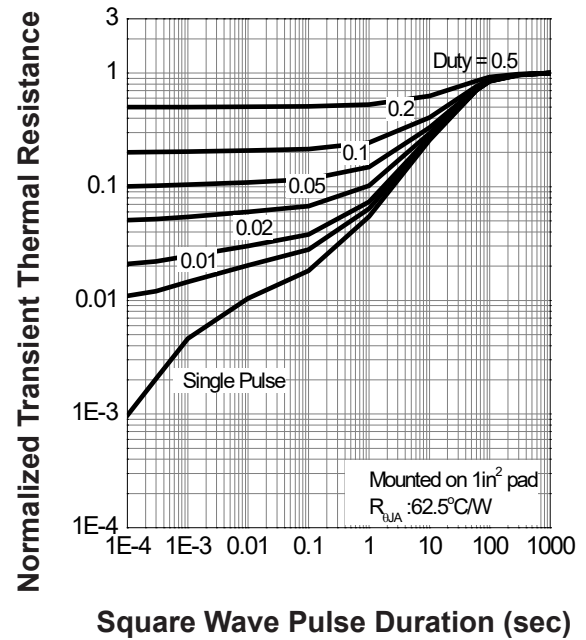
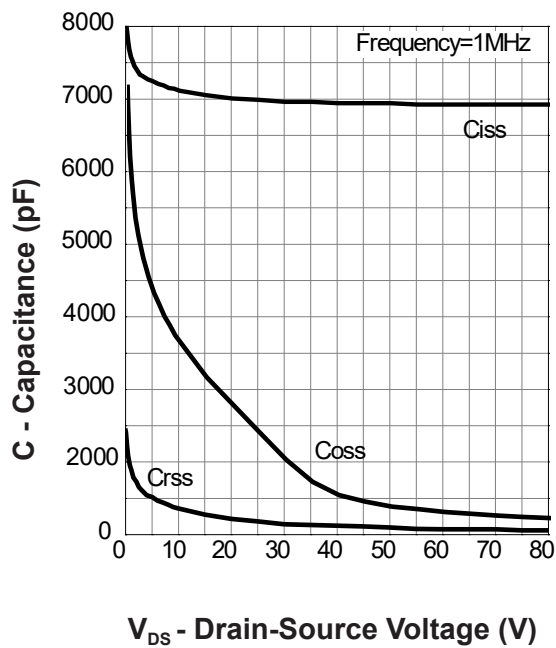
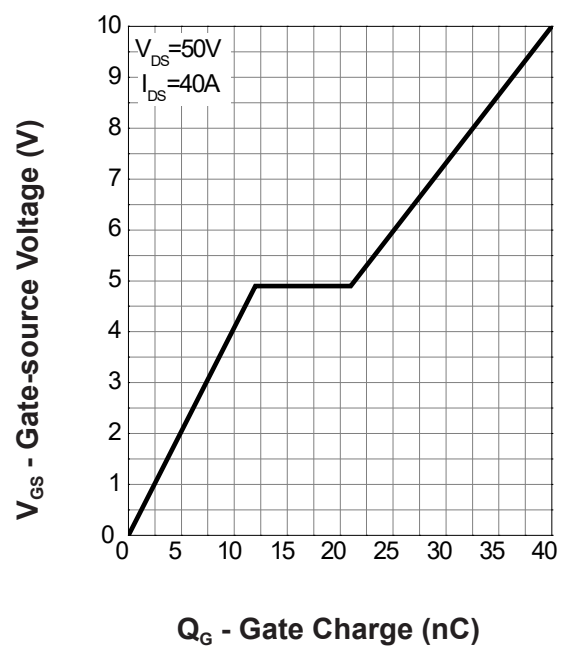
Power Dissipation

 T_c - Case Temperature (°C)

Drain Current

 T_c - Case Temperature (°C)

Output Characteristics

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

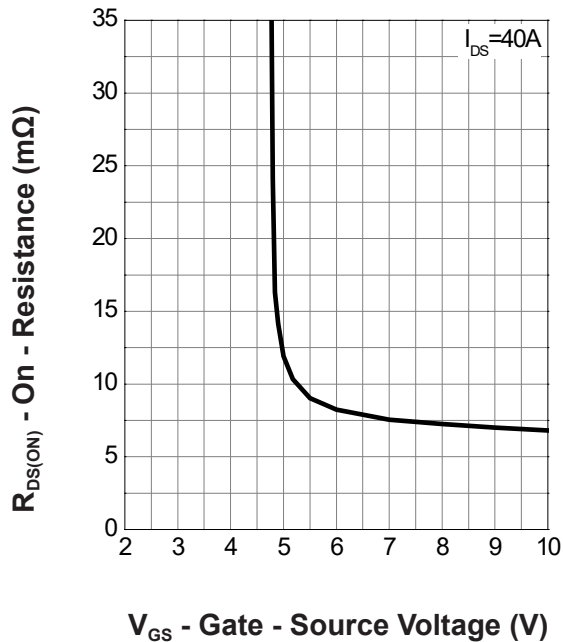
Drain-Source On Resistance

 I_D - Drain Current (A)

Typical Operating Characteristics(Cont.)

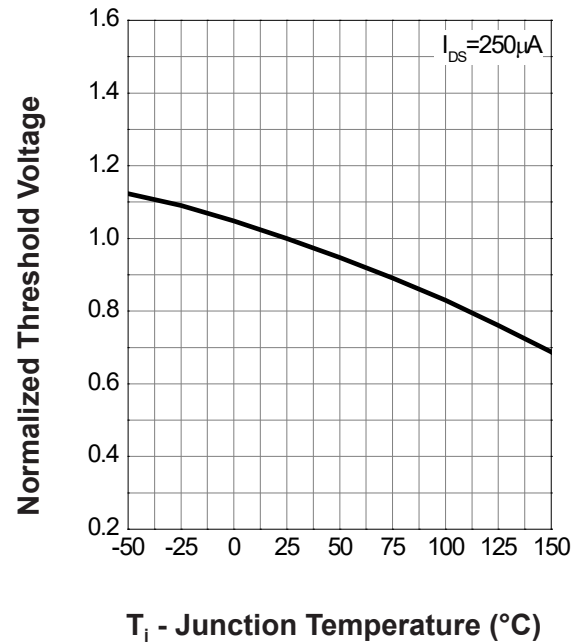
Safe Operation Area

Thermal Transient Impedance

Capacitance

Gate Charge


Typical Operating Characteristics(Cont.)

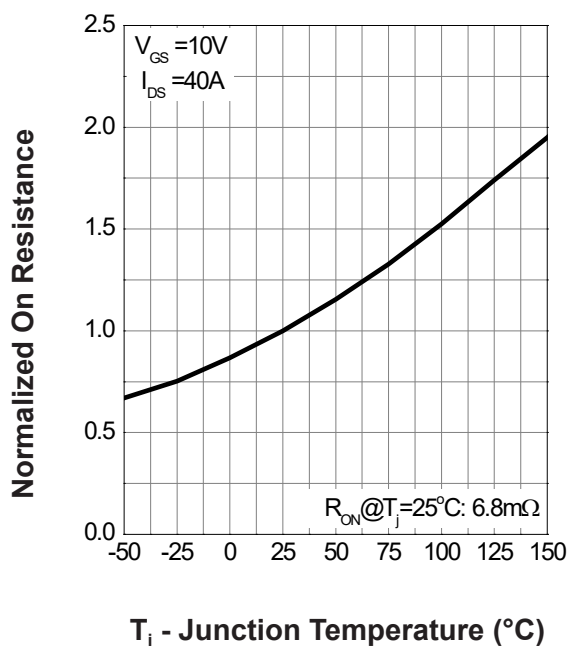
Gate-Source On Resistance



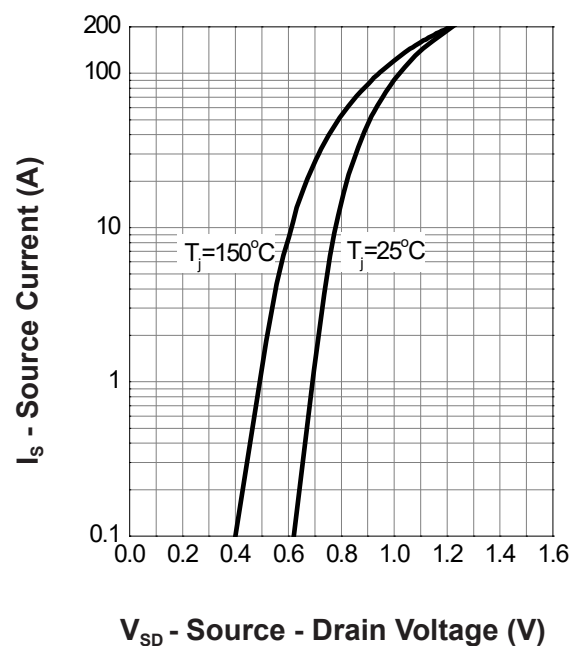
Gate Threshold Voltage



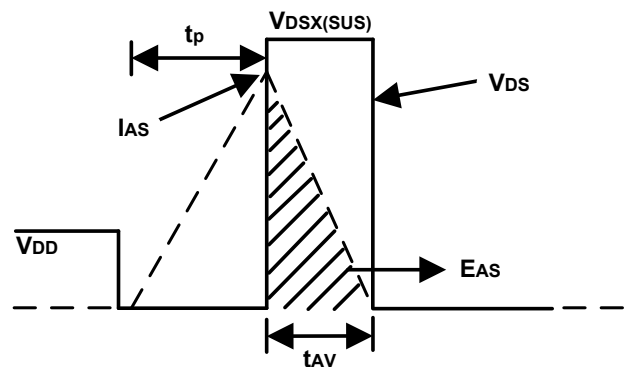
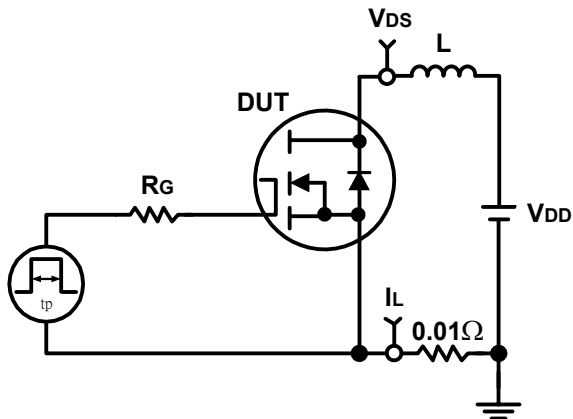
Drain-Source On Resistance



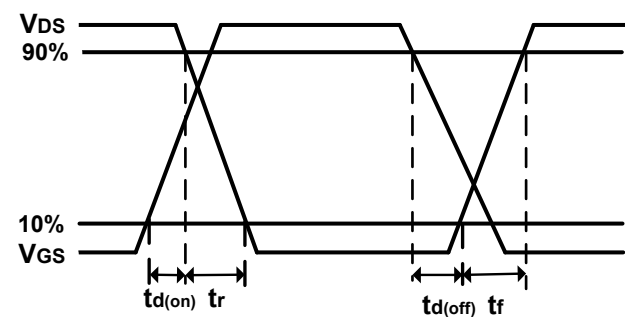
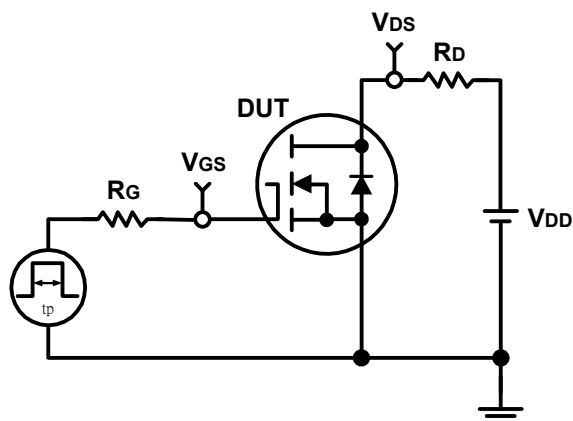
Source-Drain Diode Forward



Avalanche Test Circuit and Waveforms

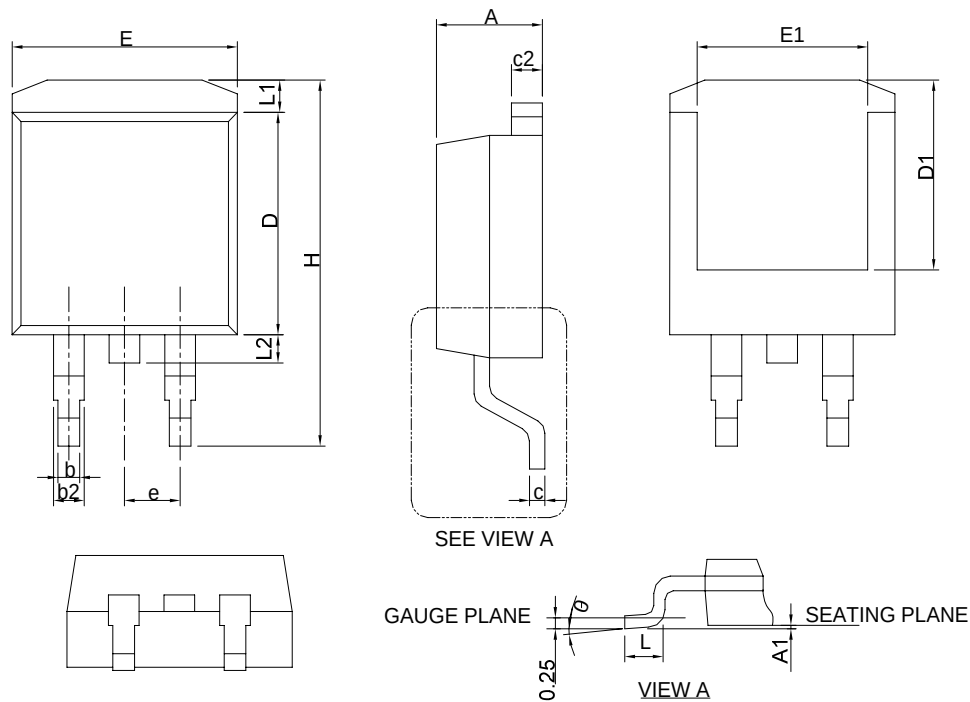


Switching Time Test Circuit and Waveforms



Package Information

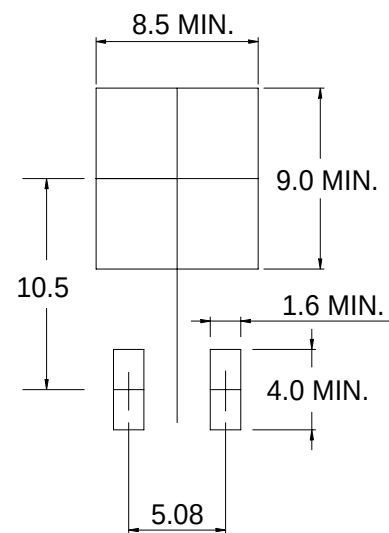
TO-263



SYMBOL	TO-263			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.06	4.83	0.160	0.190
A1	0.00	0.25	0.000	0.010
b	0.51	0.99	0.020	0.039
b2	1.14	1.78	0.045	0.070
c	0.38	0.74	0.015	0.029
c2	1.14	1.65	0.045	0.065
D	8.38	9.65	0.330	0.380
D1	6.00	9.00	0.236	0.354
E	9.65	11.43	0.380	0.450
E1	6.22	9.00	0.245	0.354
e	2.54 BSC		0.100 BSC	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	-	1.68	-	0.066
L2	-	1.78	-	0.070
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-263 AB.

RECOMMENDED LAND PATTERN



UNIT: mm