

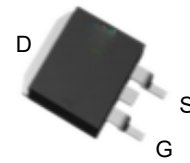
Features

- 150V/220A
 $R_{DS(ON)} = 3.6\text{m}\Omega(\text{typ.}) @ V_{GS} = 10\text{V}$
- 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)

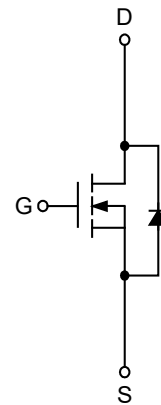
Applications

- Synchronous Rectification.
- Uninterruptible Power Supply.
- Motion Control Applications.

Pin Description



TO-263-2



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		150	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	
I _S	Diode Continuous Forward Current	T _C =25°C	220	A
I _D	Continuous Drain Current	T _C =25°C	220	
	Continuous Drain Current	T _C =100°C	165	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	660	
P _D	Maximum Power Dissipation	T _C =25°C	375	W
		T _C =100°C	187	
R _{θJC}	Thermal Resistance-Junction to Case		0.4	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient		50	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	50	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	625	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°C).

Note c : Surface mounted on 1in² pad area.

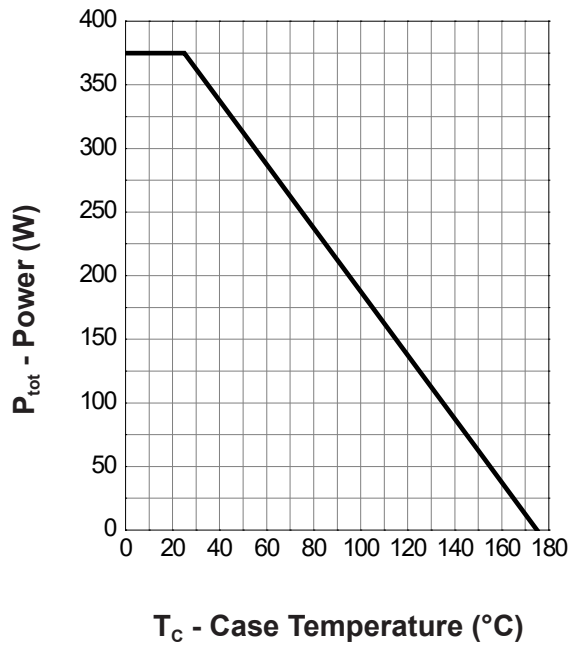
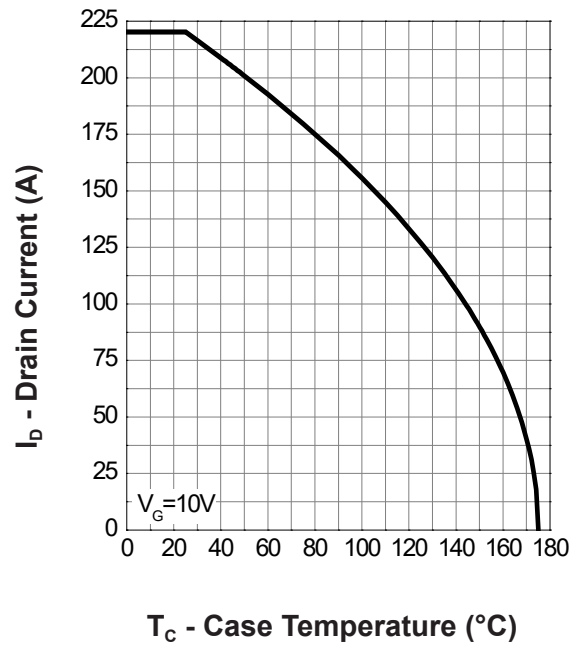
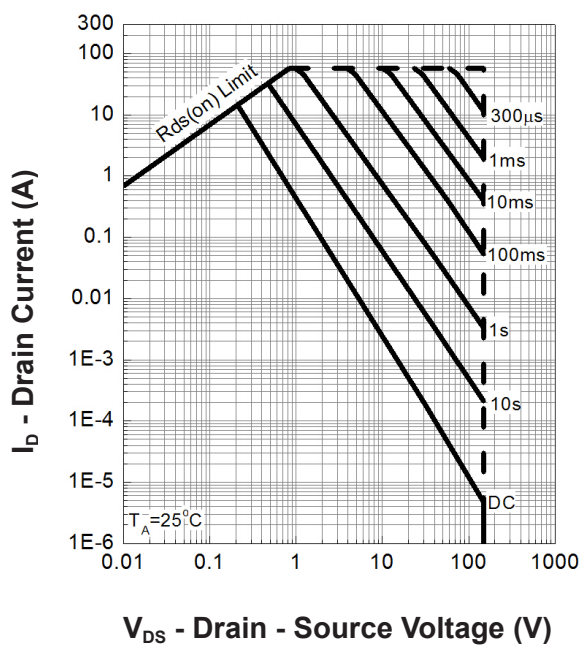
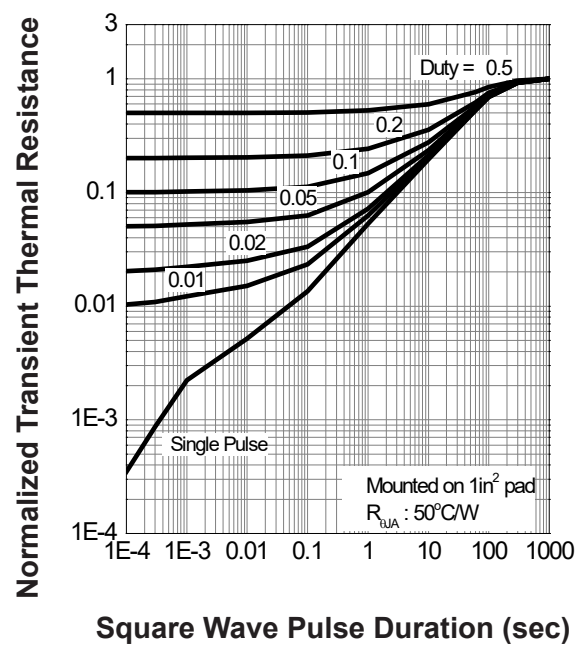
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	150	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =120V, 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	-	3.6	4.8	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V	-	0.8	1.3	V
t _{rr} ^e	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs	-	105	-	ns
Q _{rr} ^e	Reverse Recovery Charge		-	450	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =75V, Frequency=1.0MHz	-	7700	10000	pF
C _{oss}	Output Capacitance		-	585	-	
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	-	42	76	ns
t _r	Turn-on Rise Time		-	28	51	
t _{d(OFF)}	Turn-off Delay Time		-	104	188	
t _f	Turn-off Fall Time		-	248	447	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =75V, V _{GS} =10V, I _{DS} =40A	-	115	160	nC
Q _{gs}	Gate-Source Charge		-	38	-	
Q _{gd}	Gate-Drain Charge		-	24	-	

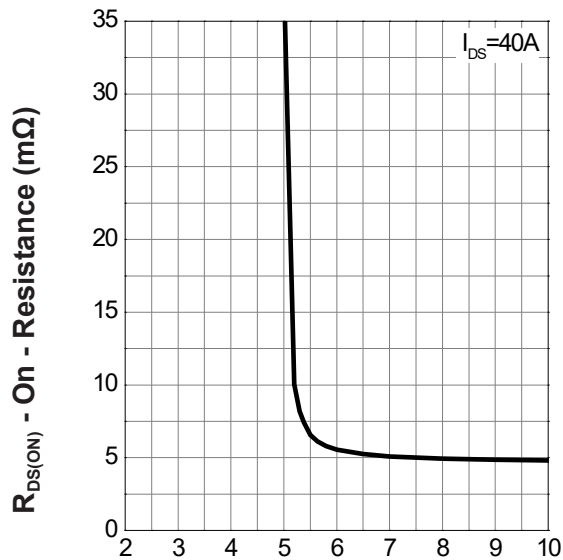
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

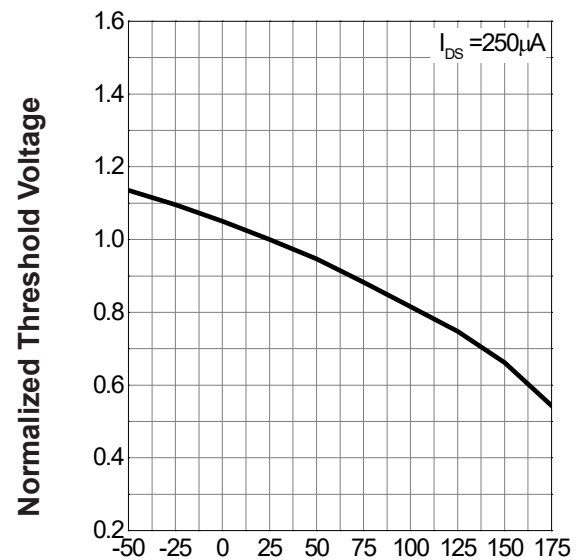
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


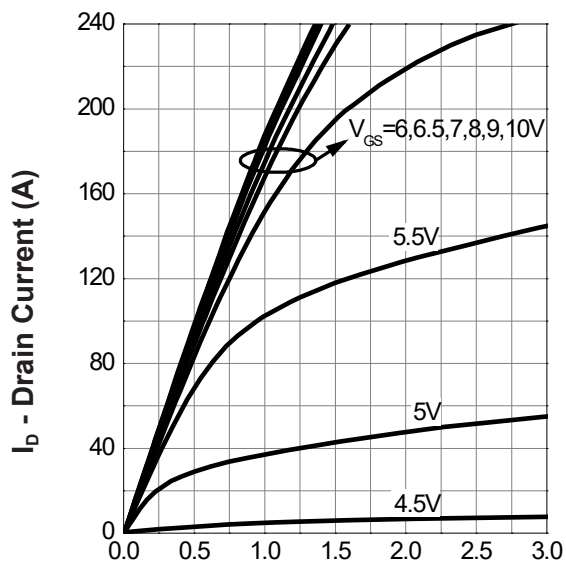
Typical Operating Characteristics(Cont.)

Gate-Source On Resistance


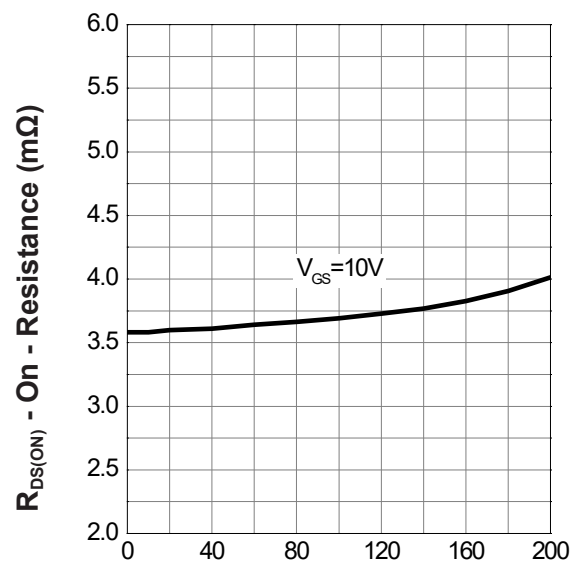
V_{GS} - Gate - Source Voltage (V)

Gate Threshold Voltage


T_j - Junction Temperature (°C)

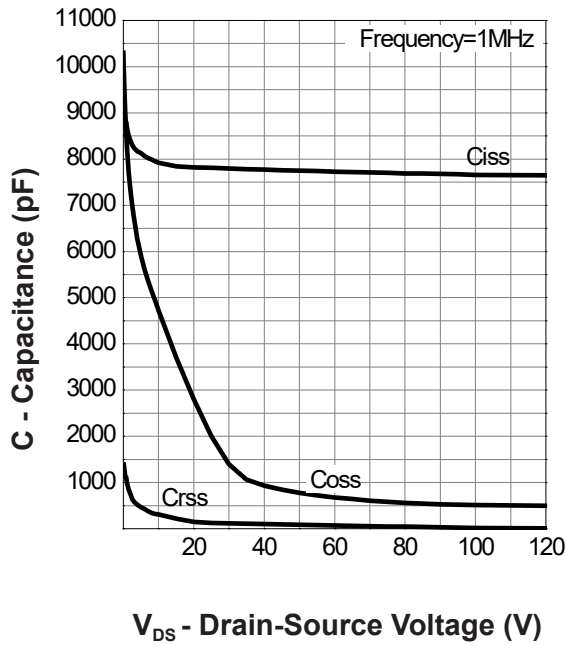
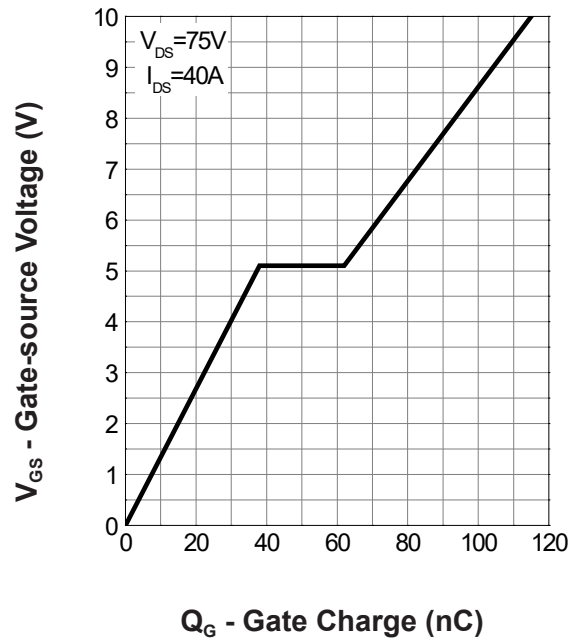
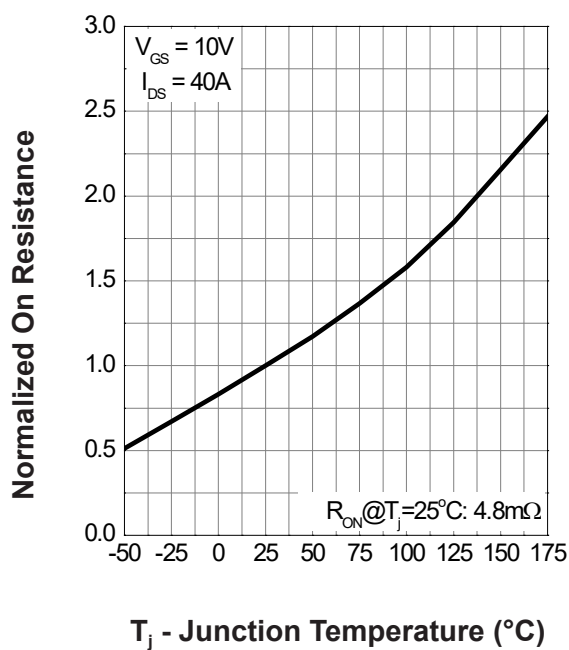
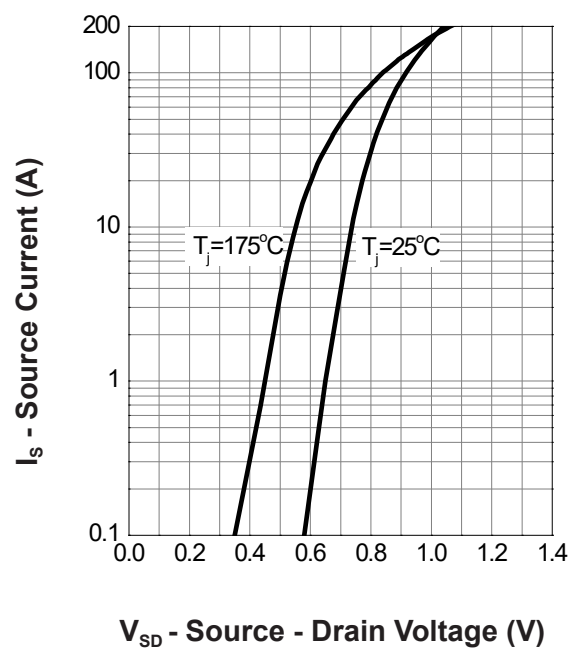
Output Characteristics


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

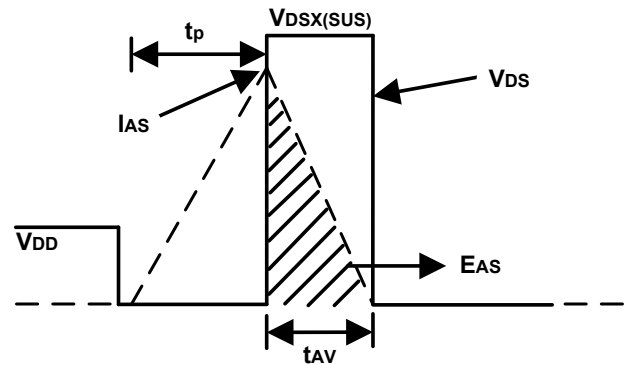
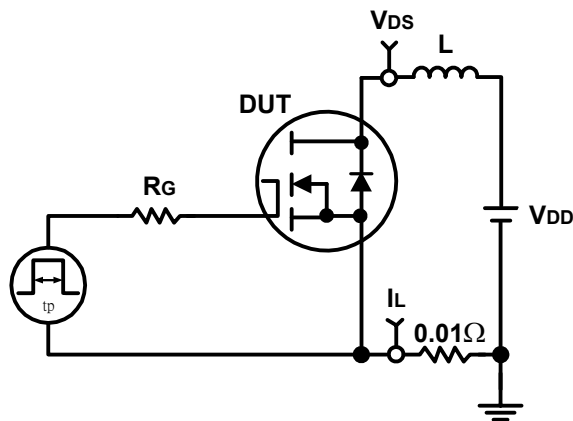
Drain-Source On Resistance


I_D - Drain Current (A)

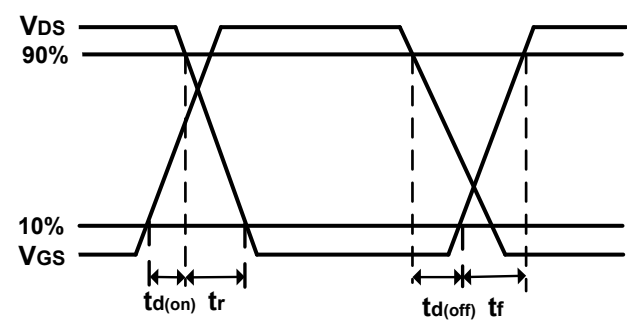
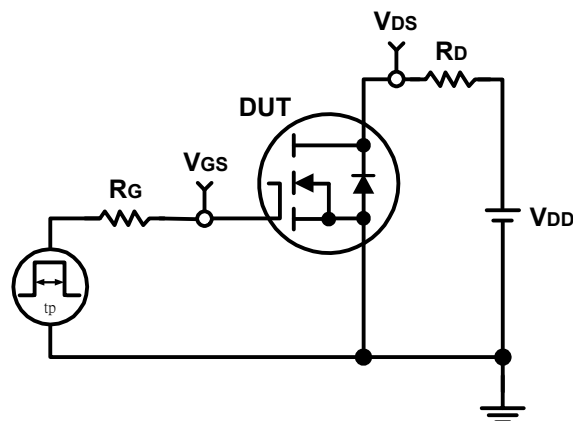
Typical Operating Characteristics(Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

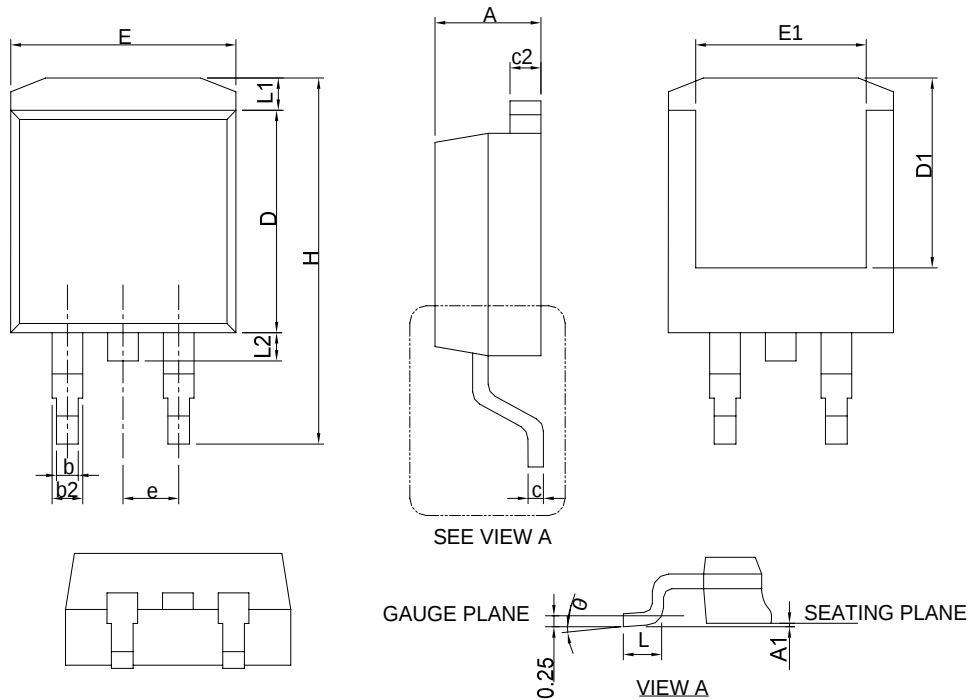


Switching Time Test Circuit and Waveforms



Package Information

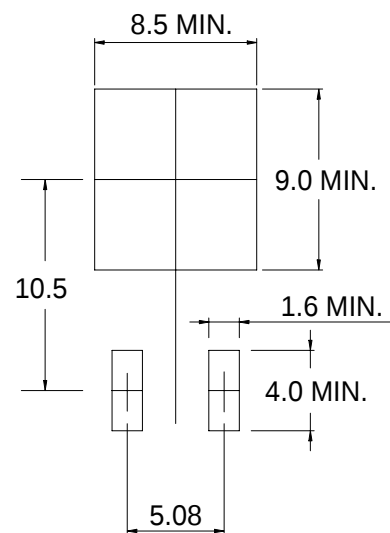
TO-263



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