

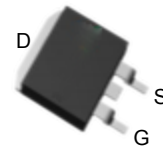
Features

- -60V/-100A
 $R_{DS(ON)} = 8\text{m}\Omega(\text{typ.}) @ V_{GS} = -10\text{V}$
 $R_{DS(ON)} = 10\text{m}\Omega(\text{typ.}) @ V_{GS} = -4.5\text{V}$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

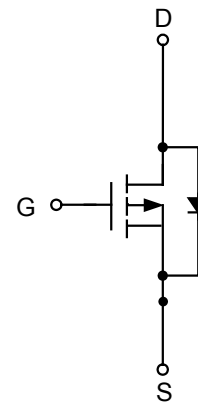
Applications

- SMPS Synchronous Rectification
- Load Switch
- DC-DC Conversion
- Or-ing

Pin Description



Top View of TO-263



P-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±20	
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	-100	A
I _D	Continuous Drain Current	T _C =25°C	-100	A
		T _C =100°C	-40	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-300	
P _D	Maximum Power Dissipation	T _C =25°C	83	W
		T _C =100°C	33	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	1.5	°C/W
I _D	Continuous Drain Current	T _A =25°C	-12	A
		T _A =70°C	-9	
P _D	Maximum Power Dissipation	T _A =25°C	2	W
		T _A =70°C	1.28	
R _{θJA}	Thermal Resistance-Junction to Ambient	Steady State	62.5	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	-42	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	440	mJ

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

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

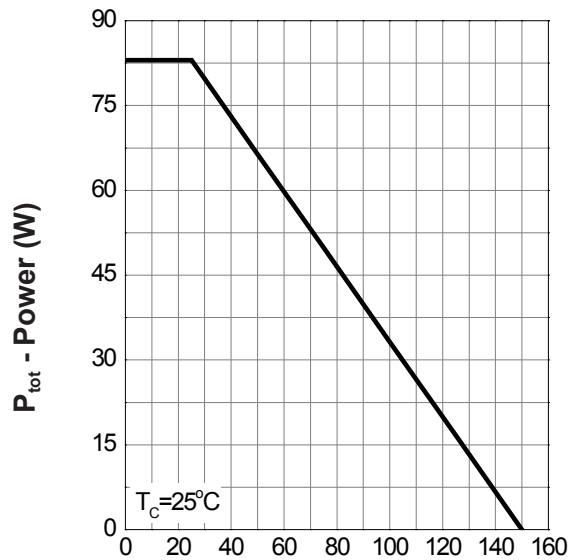
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V T _J =85°C	- -	- -	-1 -30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.0	-1.7	-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-25A V _{GS} =-4.5V, I _{DS} =-15A	- -	8 10	11 16	mΩ mΩ
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-25A, dI _{SD} /dt=100A/μs	- -	29 18	- -	ns nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,f=1MHz	-	3.2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz	-	2780	3614	pF
C _{oss}	Output Capacitance		-	426	-	
C _{rss}	Reverse Transfer Capacitance		-	331	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-20V, R _L =20Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	13	24	ns
t _r	Turn-on Rise Time		-	11	20	
t _{d(OFF)}	Turn-off Delay Time		-	94	170	
t _f	Turn-off Fall Time		-	48	87	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-4.5V, I _{DS} =-25A	-	32	-	nC
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-25A	-	63	88	
Q _{gs}	Gate-Source Charge		-	10.2	-	
Q _{gd}	Gate-Drain Charge		-	17.3	-	

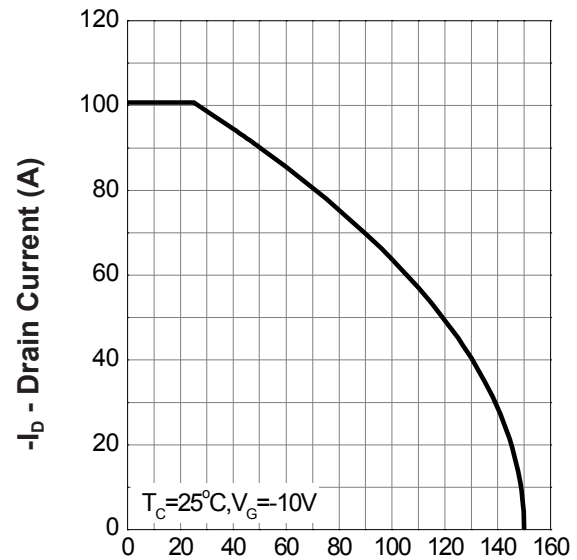
Note c : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

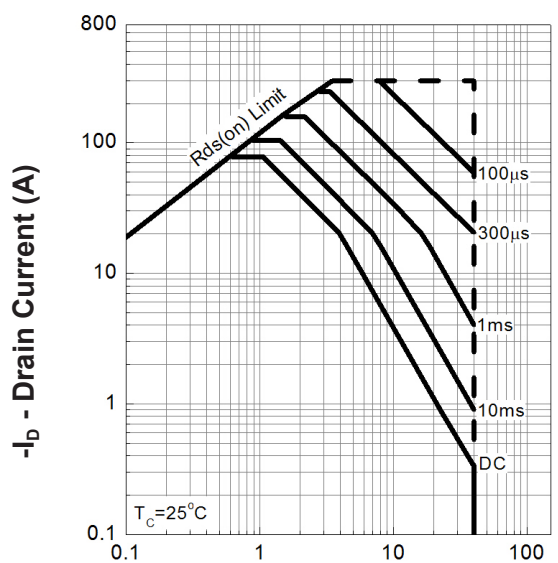
Typical Operating Characteristics

Power Dissipation


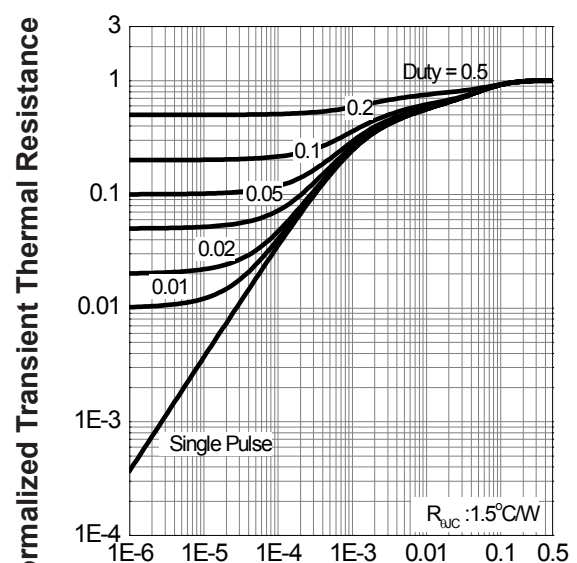
T_j - Junction Temperature ($^{\circ}\text{C}$)

Drain Current


T_j - Junction Temperature ($^{\circ}\text{C}$)

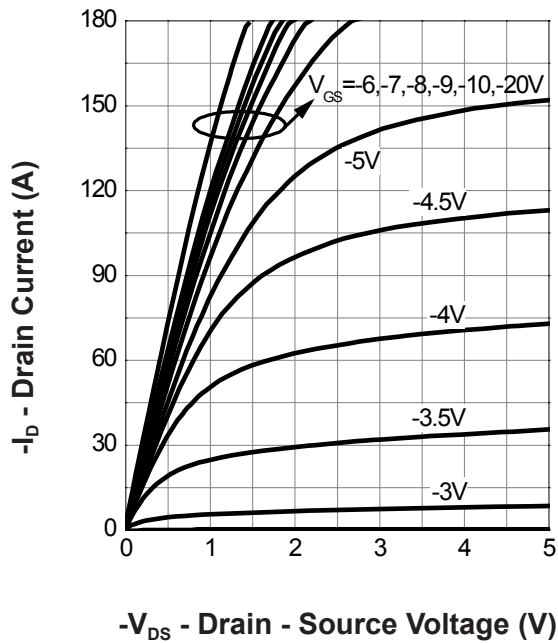
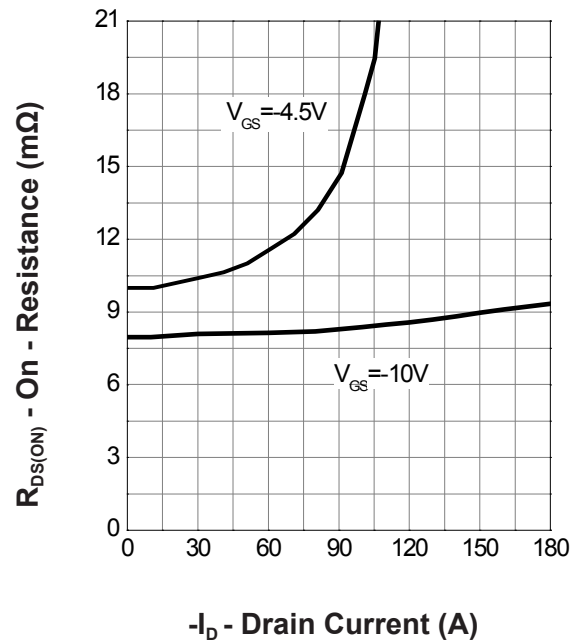
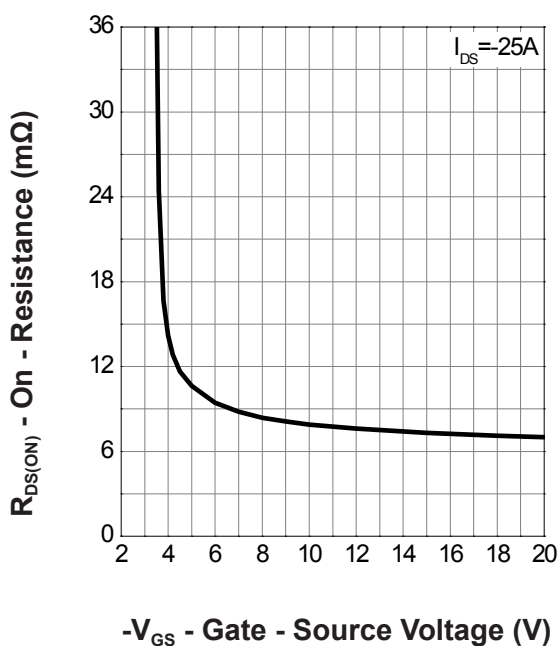
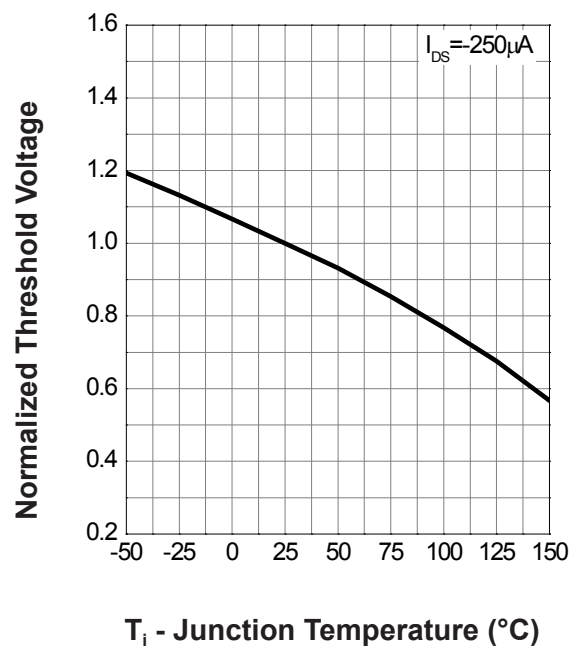
Safe Operation Area


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

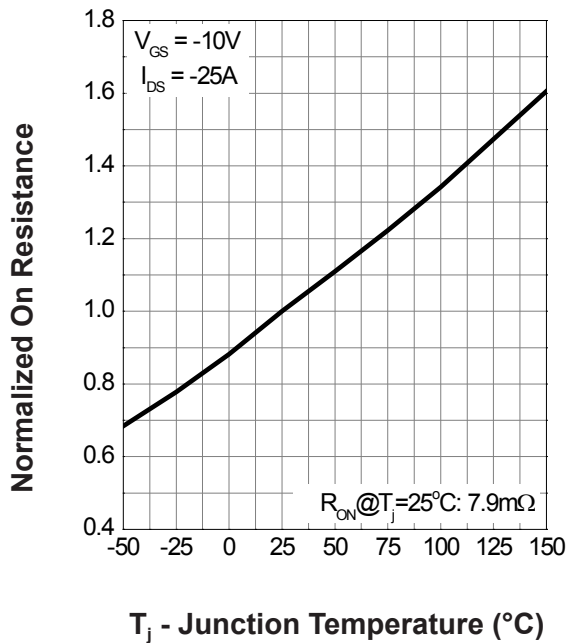
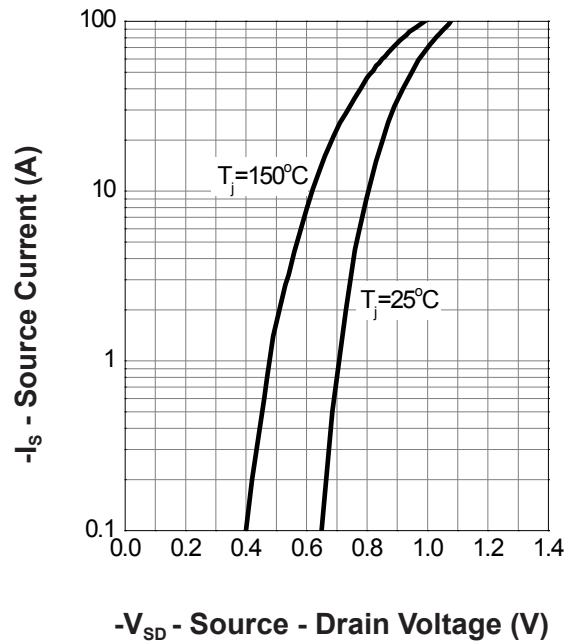
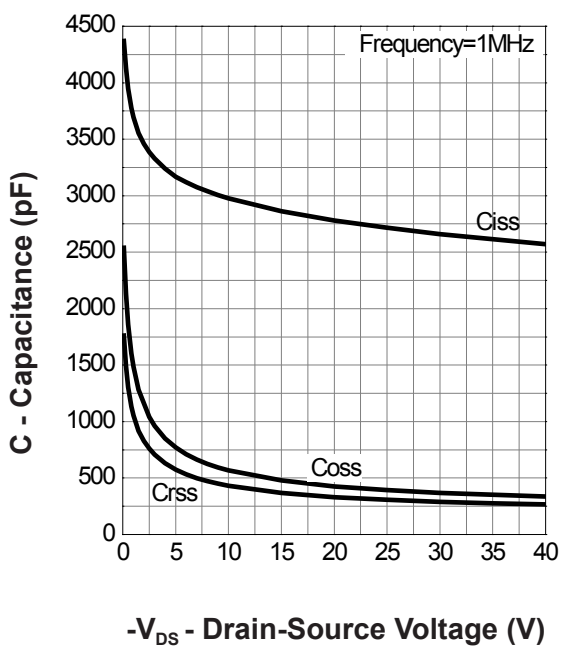
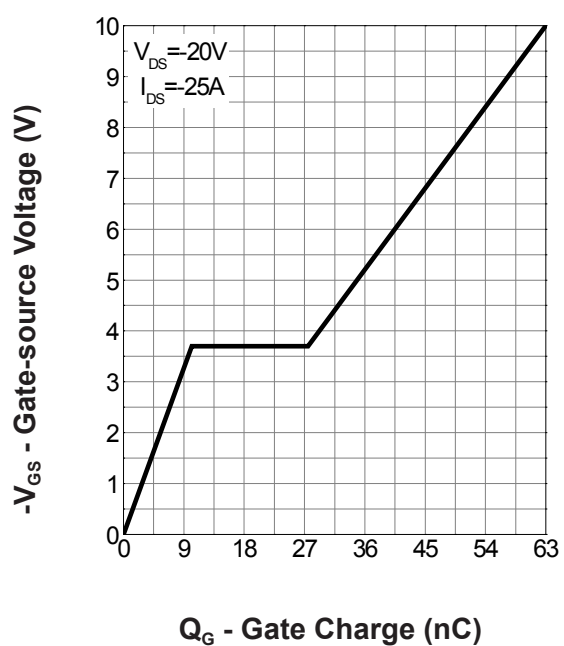
Thermal Transient Impedance


Square Wave Pulse Duration (sec)

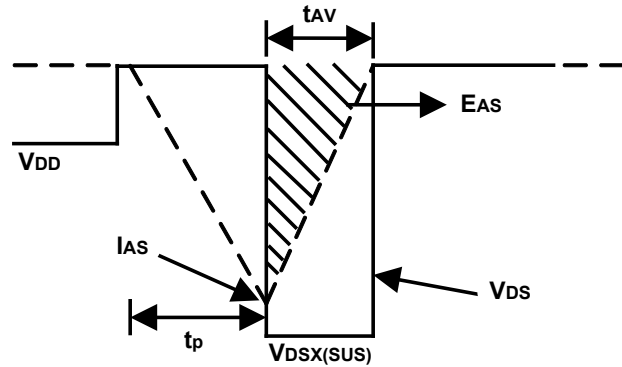
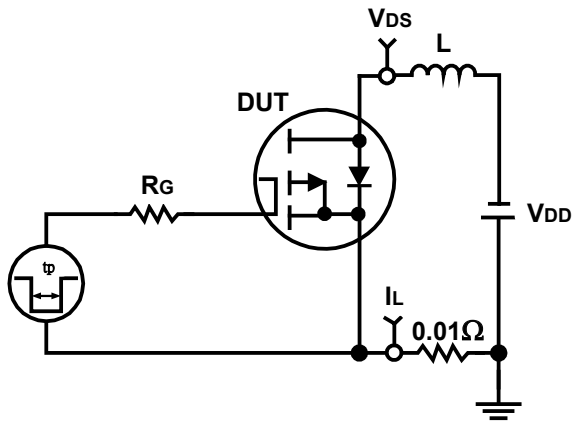
Typical Operating Characteristics(Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


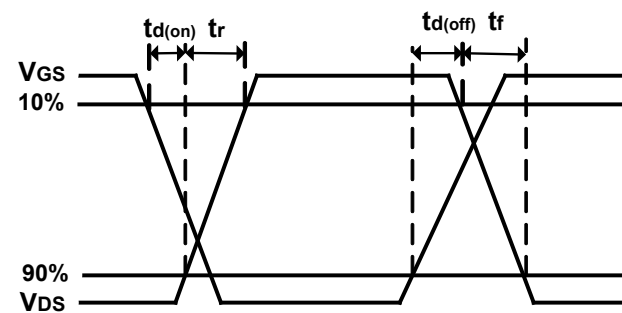
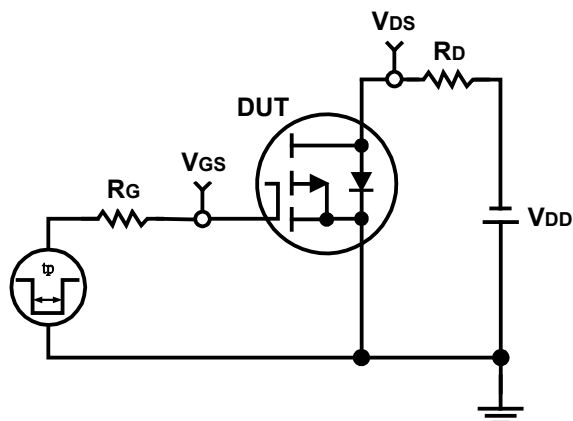
Typical Operating Characteristics(Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

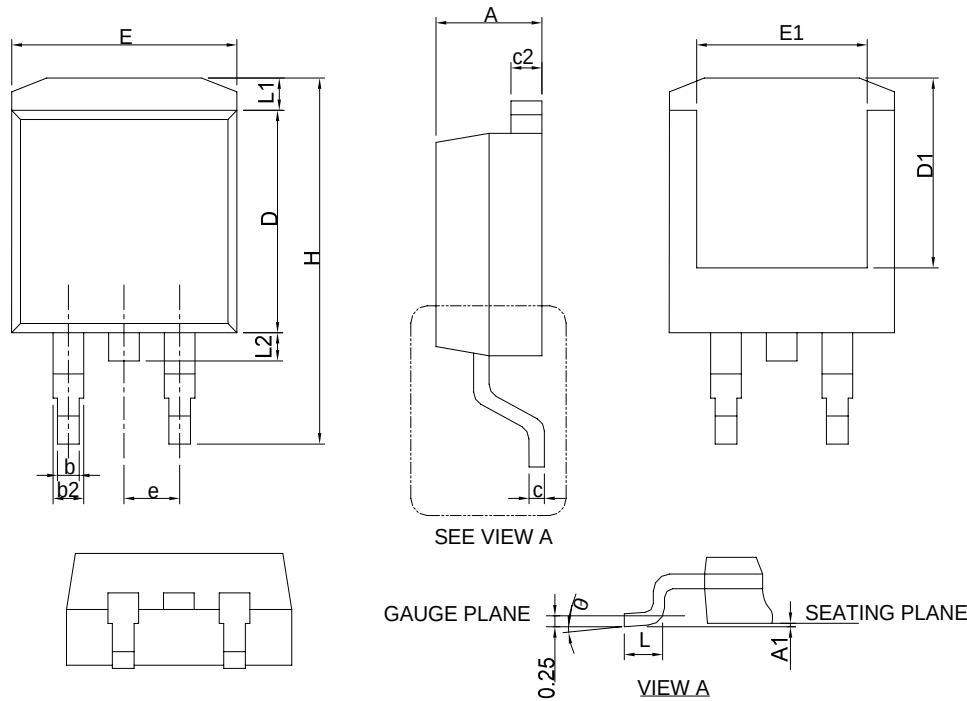


Switching Time Test Circuit and Waveforms



Package Information

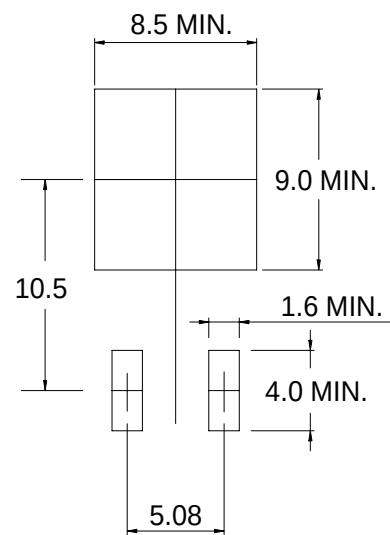
TO-263



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