

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D@25^{\circ}C$
800V	240mΩ@18V	25A
	290mΩ@15V	

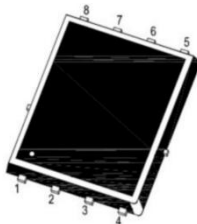
Feature

- Wide bandgap SiC MOSFET technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed switching
- Low reverse recovery(Qrr)

Application

- Switch Mode Power Supplies
- Renewable Energy
- On Board Charger
- High Voltage DC/DC Converters

Package

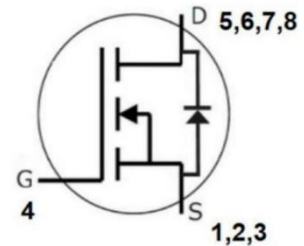


DFN5*6

Marking



Circuit diagram



Absolute maximum ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V_{DS}	$V_{GS} = 0V, I_D = 100\mu A$	800	V
Gate-Source Voltage	V_{GSmax}	AC ($f > 1\text{ Hz}$)	-10/+25	V
Gate-Source Voltage	V_{GSOP}	Static	-4/+18 -4/+15	V
Continuous Drain Current	I_D	$V_{GS} = 18V, T_C=25^{\circ}C$	25	A
	I_D	$V_{GS} = 18V, T_C=100^{\circ}C$	14	
Pulsed Drain Current	$I_{D,pulse}$	Pulse with t_p limited by T_{Jmax} at 1ms	30	A
		Pulse with t_p limited by T_{Jmax} at 100μs	81	
Power Dissipation	P_D	$T_C=25^{\circ}C$	112	W
Thermal Resistance (Typ)	$R_{\theta JC}$	Junction-to-Case	1.34	$^{\circ}C/W$
Junction Temperature	T_J		-55~ +175	$^{\circ}C$
Storage Temperature	T_{STG}		-55~ +175	$^{\circ}C$

Electrical characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =100μA	800			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =800V,V _{GS} = 0V			50	μA
Gate-Source leakage current	I _{GSS}	V _{GS} =18V, V _{DS} = 0V			250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =2.2mA		3.0		V
		V _{DS} =V _{GS} , I _D =2.2mA,T _J = 175°C		2.1		
Drain-source on-resistance	R _{DS(on)}	V _{GS} =15V, I _D =5A		240	290	mΩ
		V _{GS} =18V, I _D =5A		190	240	
		V _{GS} =15V, I _D =5A,T _J = 175°C		320		
		V _{GS} =18V, I _D =5A,T _J = 175°C		300		
Transconductance	g _{fs}	V _{GS} =18V, I _D =5A		5		S
		V _{GS} =18V, I _D =5A,T _J = 175°C		4		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =600V,V _{GS} =0V,f =1 MHz V _{AC} = 25mV		371		pF
Output Capacitance	C _{oss}			37		
Reverse Transfer Capacitance	C _{rss}			7		
Internal Gate Resistance	R _{G(int)}	f=1 MHz, V _{AC} = 25mV		3.5		Ω
Total Gate Charge	Q _g	V _{DS} =400V,I _D =5A V _{GS} =-4/18V		17.6		nC
Gate-Source Charge	Q _{gs}			3.7		
Gate-Drain Charge	Q _{gd}			7		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	V _{GS} =-4V,T _C =25°C		22		A
Diode Forward voltage	V _{SD}	V _{GS} =-4V, I _{SD} = 2.5A		3.8		V
		V _{GS} =-4V, I _{SD} = 2.5A,T _J =175°C		3.1		V
Diode pulse Current	I _{S, pulse}	V _{GS} = -4V, pulse width t _p limited by T _{imax}		30		A

Typical Characteristics

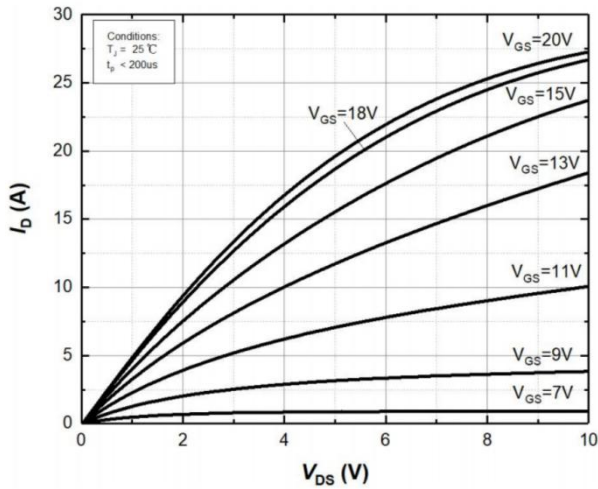


Figure 1. Output characteristics at $T_j=25^\circ\text{C}$

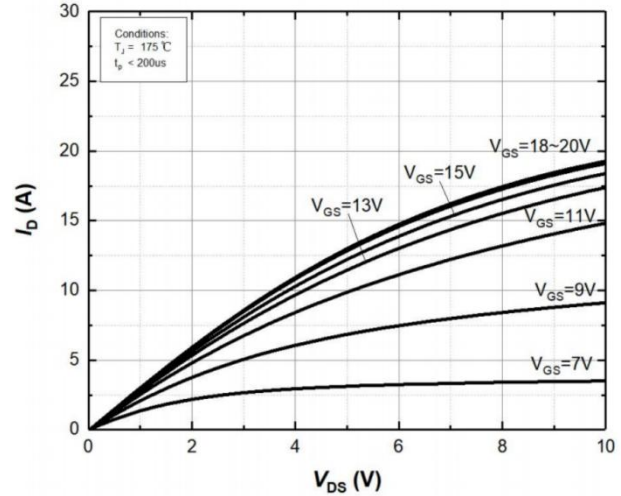


Figure 2. Output characteristics at $T_j=175^\circ\text{C}$

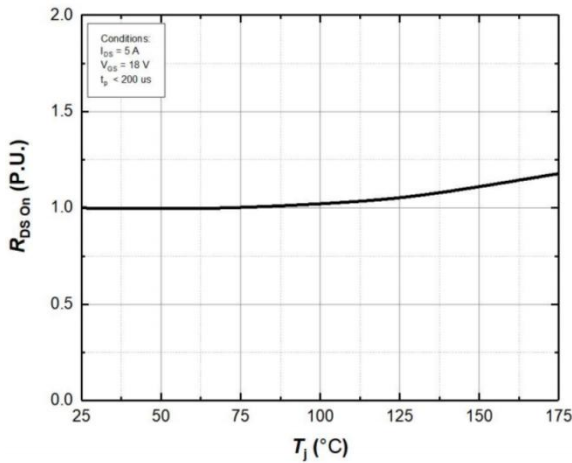


Figure 3. Normalized On-Resistance vs. Temperature

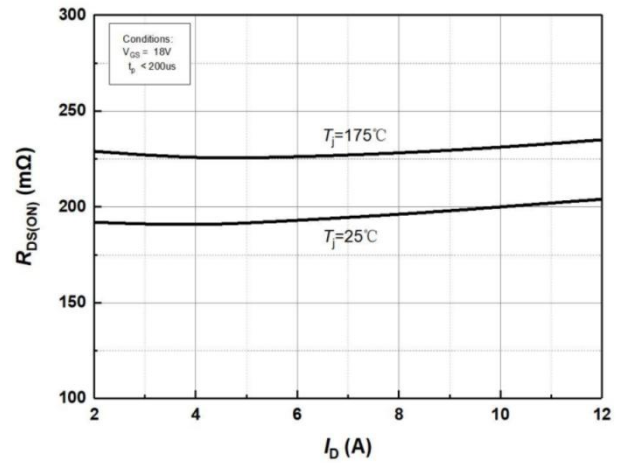


Figure 4. On-Resistance vs. Drain current for Various Temperature

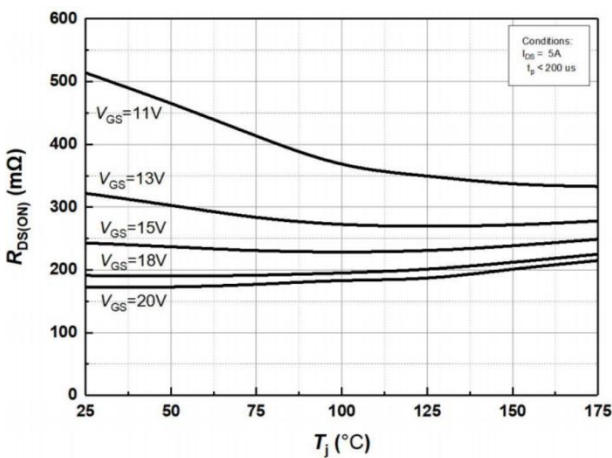


Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

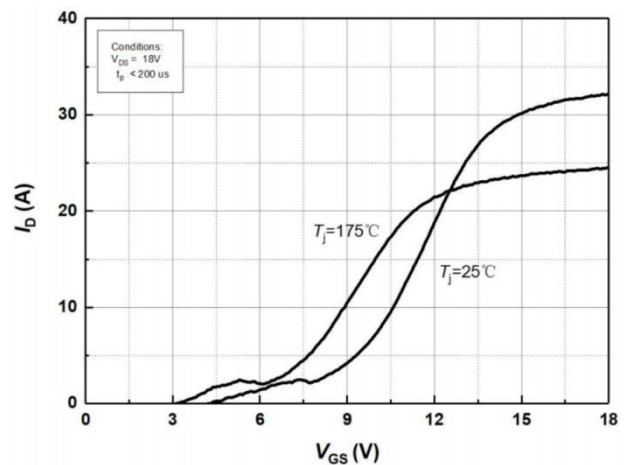


Figure 6. Transfer Characteristics for Various Junction Temperatures

Typical Characteristics

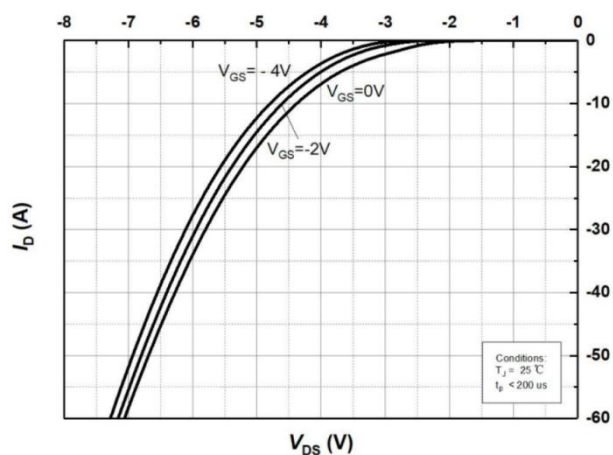


Figure 7. Body Diode Characteristics at Tj=25°C

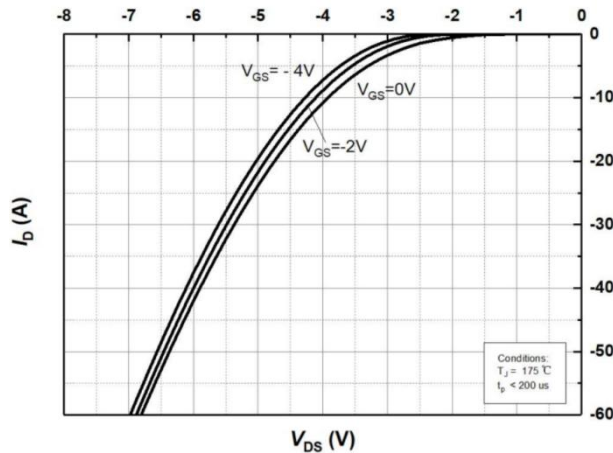


Figure 8. Body Diode Characteristics at Tj=175°C

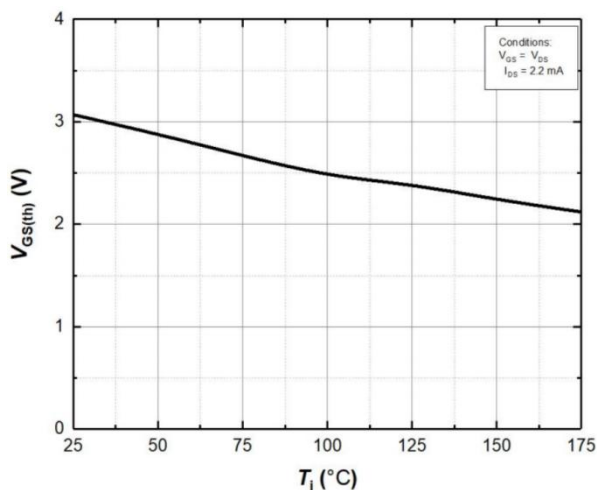


Figure 9. Threshold Voltage vs. Temperature

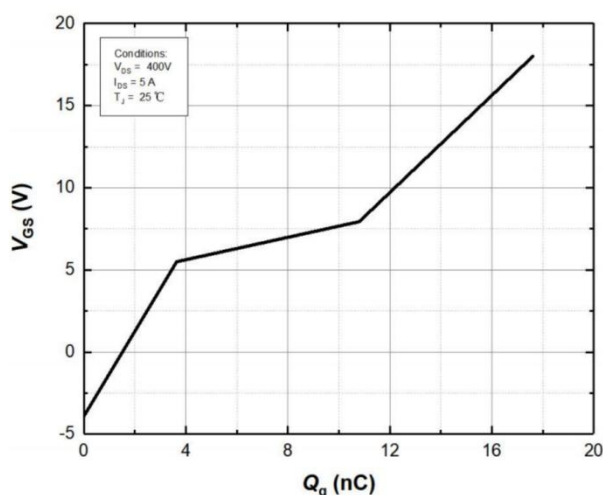


Figure 10 Gate Charge Characteristics

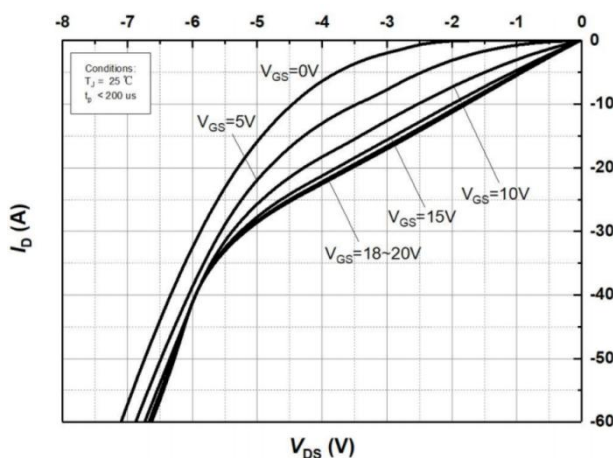


Figure 11. 3rd Quadrant Characteristic at Tj=25°C

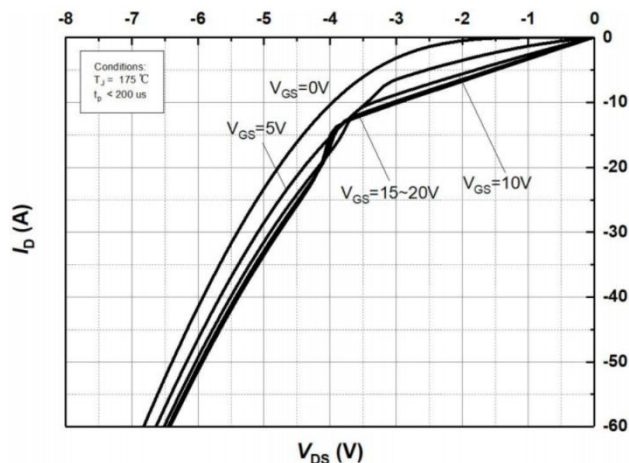


Figure 12. 3rd Quadrant Characteristic at Tj=175°C

Typical Characteristics

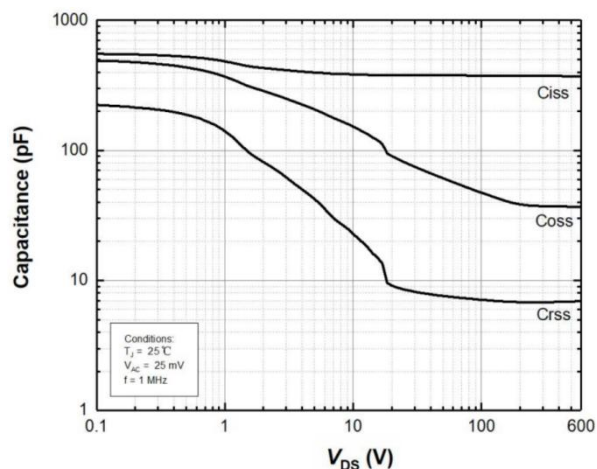


Figure 13. Capacitances vs. Drain-Source Voltage (0 – 600V)

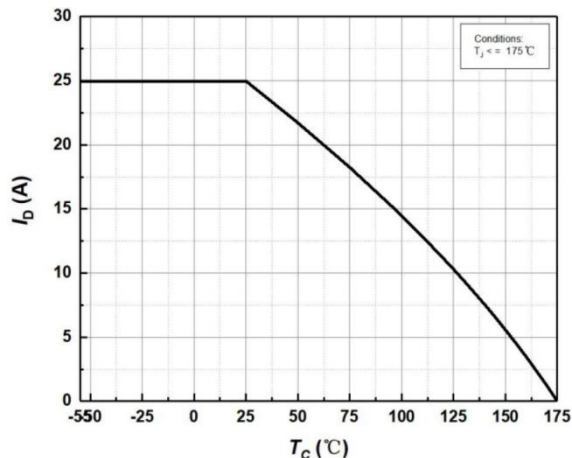


Figure 14. Continuous Drain Current Derating vs Case Temperature

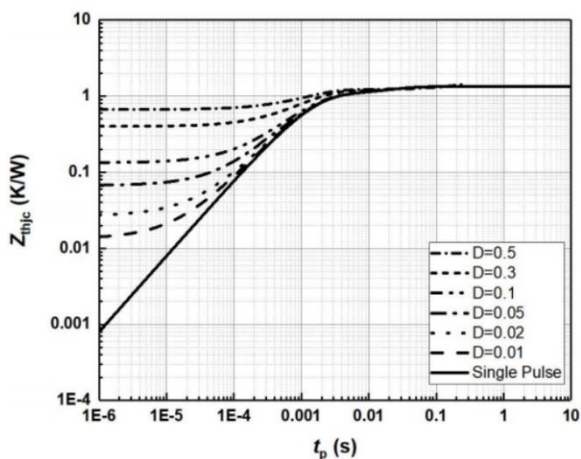


Figure 15. Transient Thermal Impedance (Junction – Case)

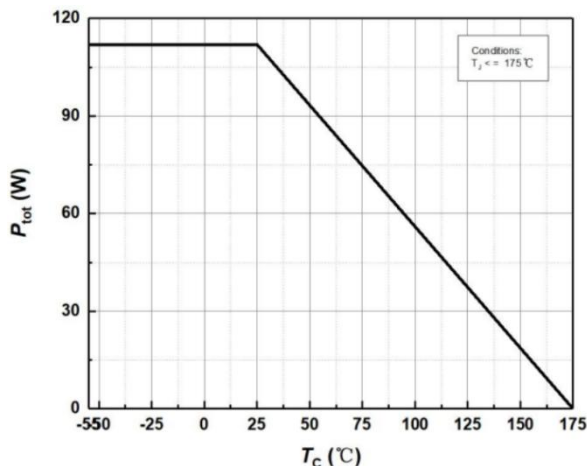


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

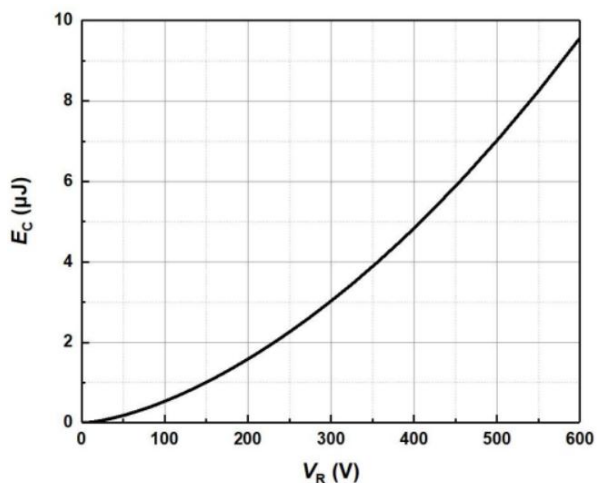


Figure 17. Output Capacitor Stored Energy

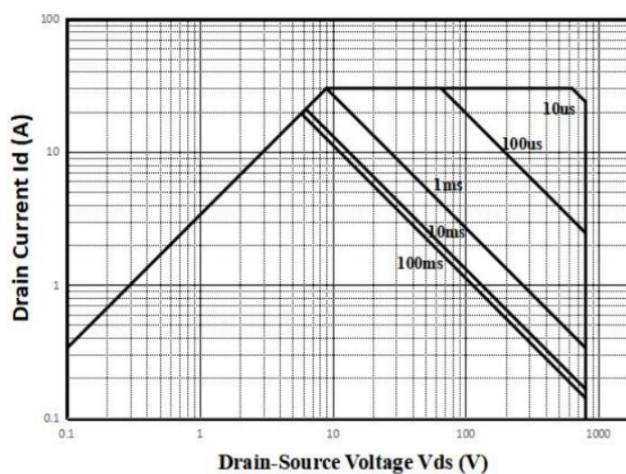
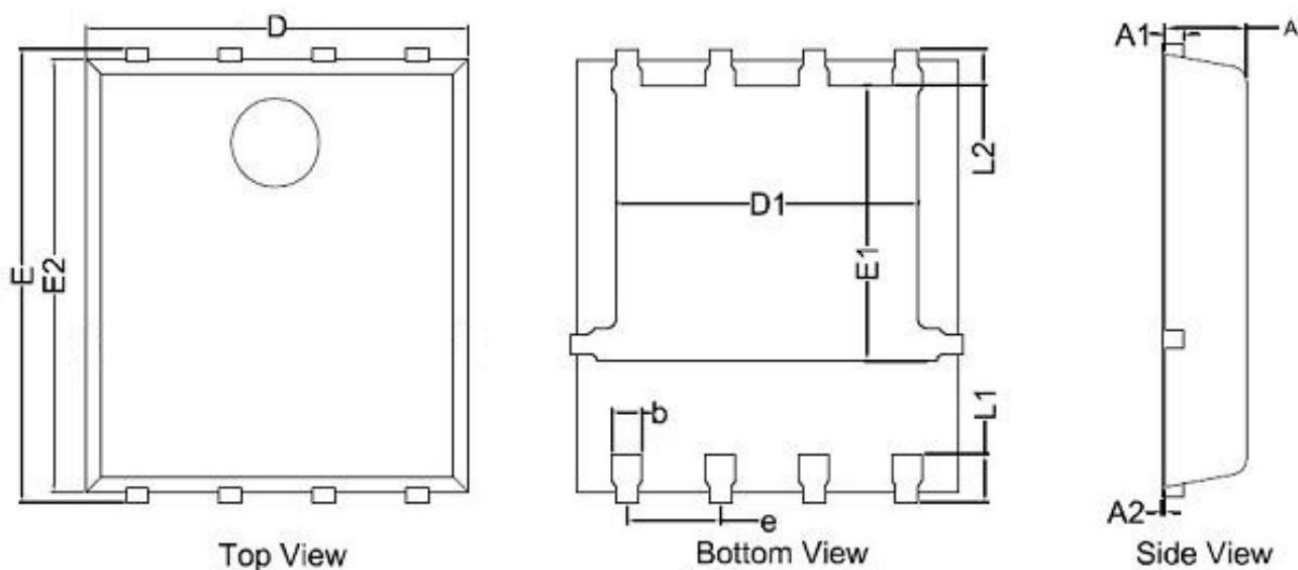


Figure 18. Safe Operating Area

DFN5*6 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.200	0.300	0.008	0.012
A2	0.000	0.050	0.000	0.002
D	4.800	5.000	0.189	0.197
E	5.900	6.100	0.232	0.240
D1	3.610	3.960	0.142	0.156
E1	3.380	3.780	0.133	0.149
E2	5.700	5.800	0.224	0.228
b	0.330	0.510	0.013	0.020
e	1.270 BSC.		0.050 BSC	
L1	0.510	0.710	0.020	0.028
L2	0.410	0.610	0.016	0.024