

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
1200V	48mΩ@20V	35A

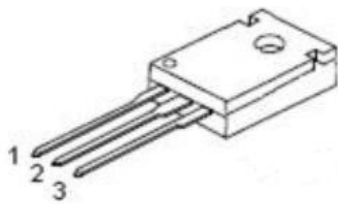
### Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low  $R_{DS(on)}$
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

### Applications

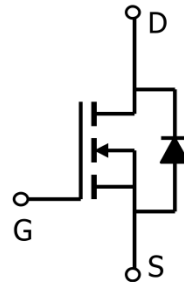
- Power Factor Correction Modules
- Switch Mode Power Supplies
- Photovoltaic Inverter
- UPS Power Supply
- Motor Drive
- High Voltage DC/DC Converter
- Switching Mode Power Supply

### Package

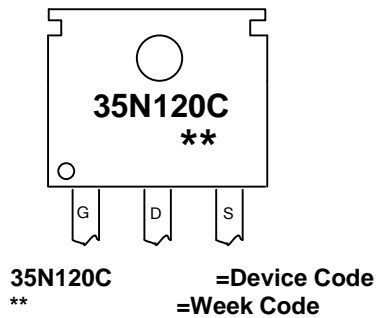


TO-247-3L(1:G 2:D 3:S)

### Circuit diagram



### Marking



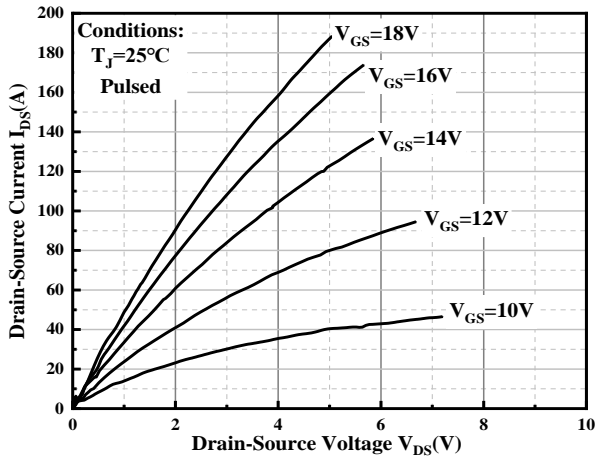


**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

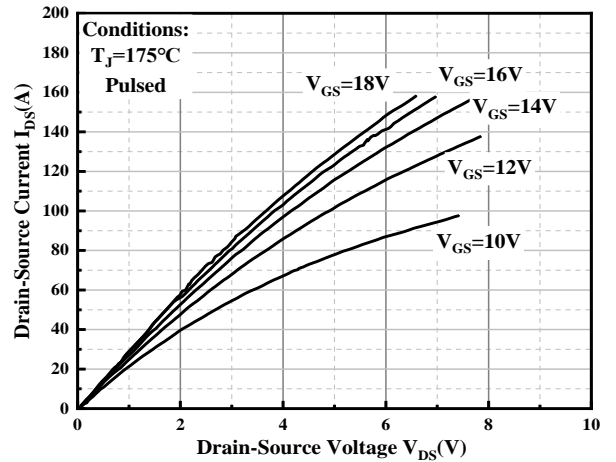
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V <sub>DS</sub>	1200	V
Gate-Source Voltage	V <sub>GSMAX</sub>	-10/+22	V
Recommend Gate-Source Voltage	V <sub>GSop</sub>	-5/+18	V
Continuous Drain Current(Tc=25°C)	I <sub>D</sub>	65	A
Continuous Drain Current(Tc=100°C)	I <sub>D</sub>	35	A
Pulsed Drain Current	I <sub>DM</sub>	130	A
Total Power Dissipation(Tc=25°C)	P <sub>D</sub>	327	W
Thermal Resistance Junction-Case	R <sub>θJC</sub>	0.4	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 175	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 175	°C

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

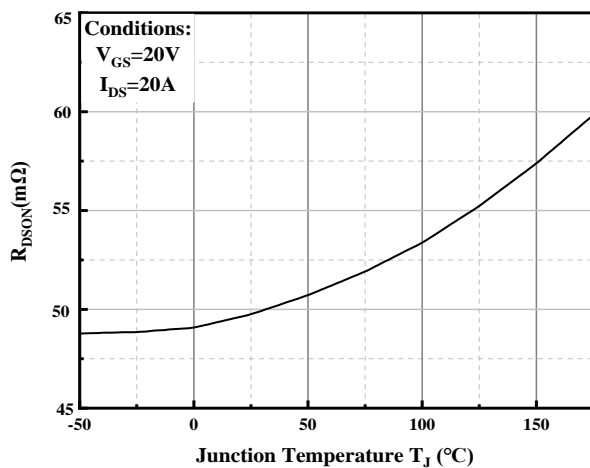
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V , ID=100uA	1200	---	---	V
Drain-Source Leakage Current	I <sub>DSS</sub>	VDS=1200V, VGS=0V, Tj=25°C	---	5	100	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	VGS=-10/+22 , VDS=0V, Tj=25°C	---	---	100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	VGS=VDS , ID =10mA, Tj=25°C	2.0	3.1	4.0	V
		VGS=VDS , ID =10mA, Tj=175°C	---	2.1	---	
Static Drain-Source On-Resistance	R <sub>DSON</sub>	VGS=20V , ID=20A, Tj=25°C	---	48	60	mΩ
		VGS=20V , ID=20A, Tj=175°C	---	65	79	
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iSS</sub>	VDS=800V , VGS=0V , f=1MHz	---	2560	---	pF
Output Capacitance	C <sub>oss</sub>		---	121	---	
Reverse Transfer Capacitance	C <sub>rSS</sub>		---	8	---	
<b>Switching Characteristics</b>						
Total Gate Charge (4.5V)	Q <sub>g</sub>	VDS=800V , VGS= -5/+18V , ID=20A	---	124	---	nC
Gate-Source Charge	Q <sub>gs</sub>		---	25	---	
Gate-Drain Charge	Q <sub>gd</sub>		---	47	---	
Turn-On Delay Time	T <sub>d(on)</sub>	VDS=800V , VGS= -5/+18V , ID=20A RG=10Ω	---	10.2	---	ns
Rise Time	T <sub>r</sub>		---	28.6	---	
Turn-Off Delay Time	T <sub>d(off)</sub>		---	42.2	---	
Fall Time	T <sub>f</sub>		---	14	---	
Turn-On Energy	E <sub>on</sub>		---	721	---	
Turn-Off Energy	E <sub>off</sub>	---	118.6	---		
Total Switching Loss	E <sub>tot</sub>	---	832.6	---		
<b>Reverse Diode Characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub>	VGS= -5V , I <sub>SD</sub> =20A , Tj=25°C	---	4.4	7	V
		VGS= -5V , I <sub>SD</sub> =20A , Tj=175°C	---	3.8	---	
Reverse Recovery Time	trr	VGS=-5V/+18V, I <sub>SD</sub> =20A, V <sub>R</sub> =800V, di/dt=1000A/μs	---	19.4	---	ns
Reverse Recovery Charge	Q <sub>rr</sub>		---	0.16	---	nC
Peak Reverse Recovery Current	I <sub>rrm</sub>		---	24.4	---	A
Reverse Recovery Energy	E <sub>rec</sub>		---	17.1	---	μJ
			---	---	---	---

**Typical Characteristics**


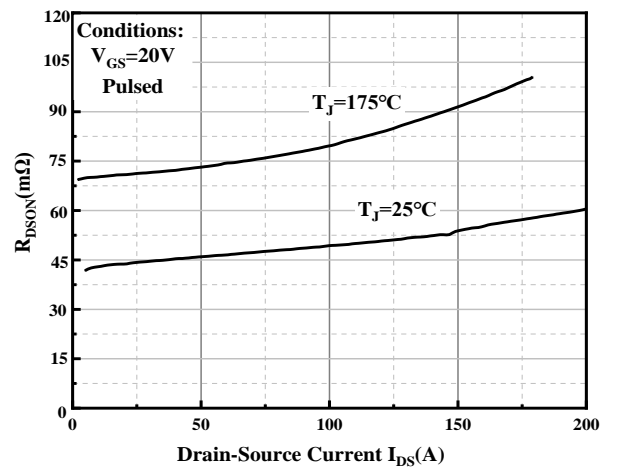
Typical output characteristic(25°C)



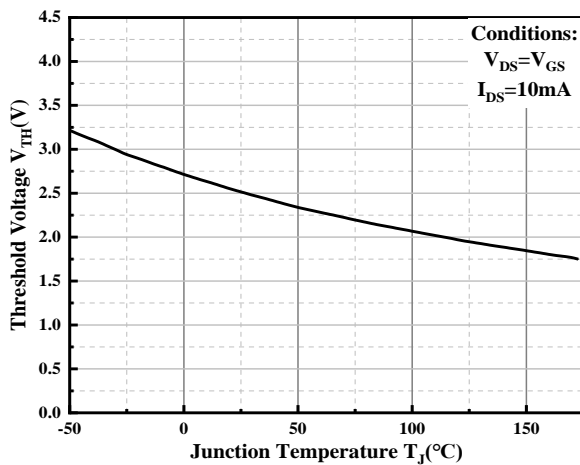
Typical output characteristic(175°C)



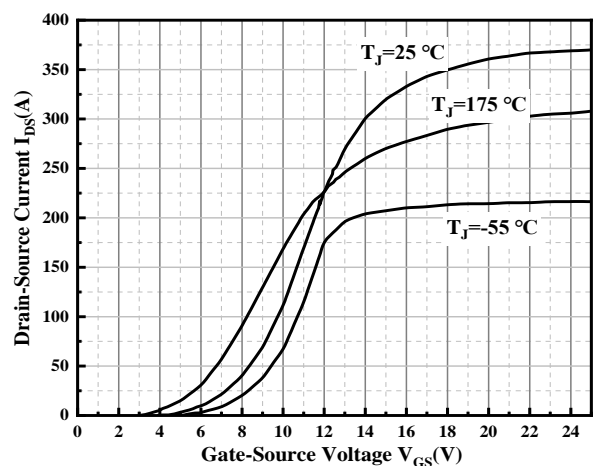
Normalized On-Resistance with Temperature



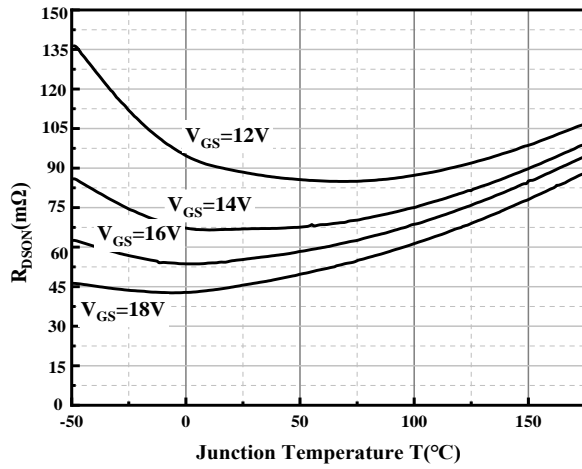
On-Resistance vs. Drain-Source Current



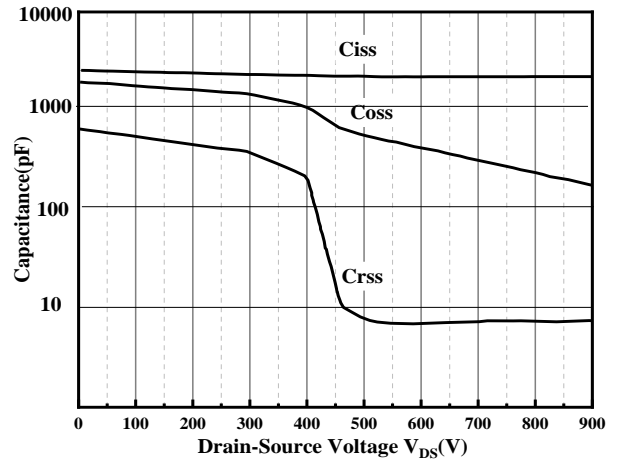
Threshold Voltage Variation with Temperature



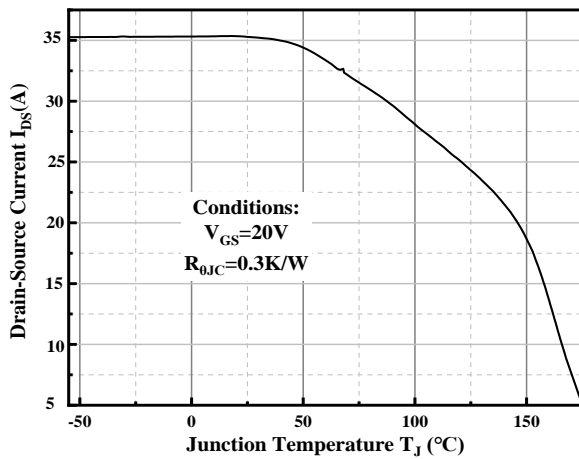
Transfer Characteristics



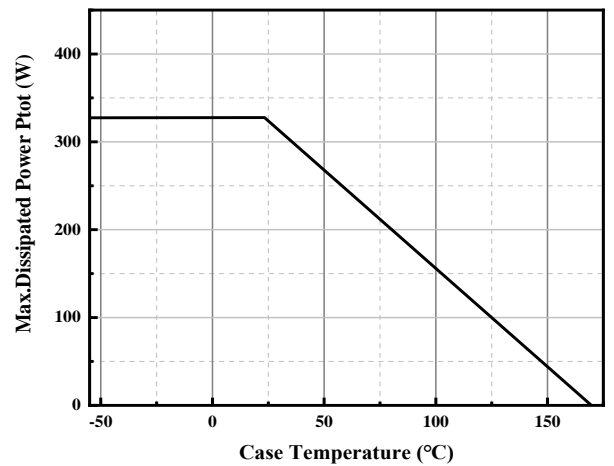
On-Resistance Variation with Temperature



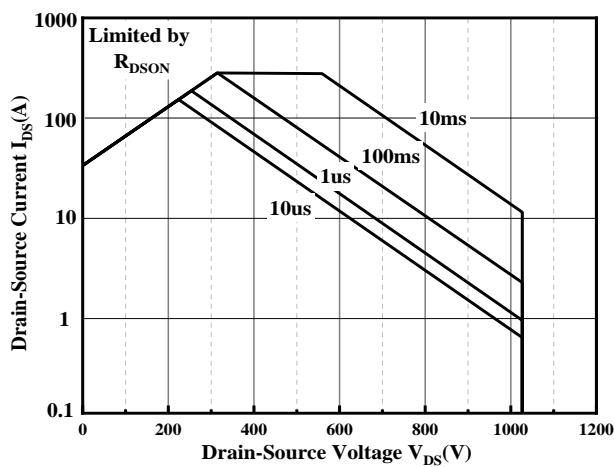
Capacitance vs. Drain-to-Source Voltage



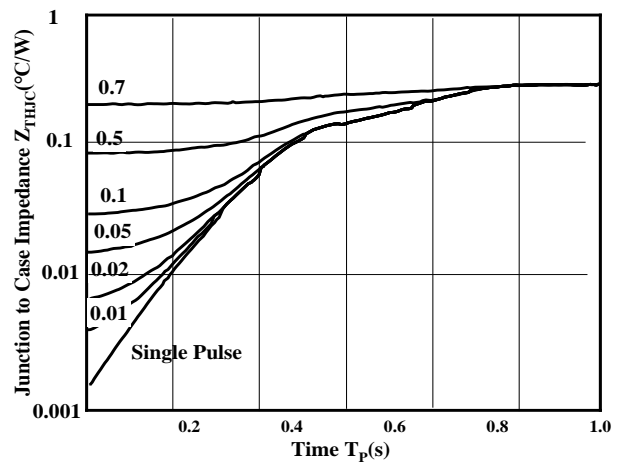
Maximum Ids vs. Case Temperature



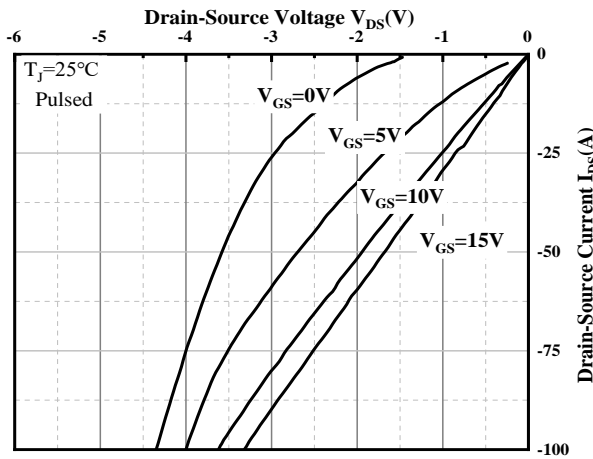
Power dissipation vs. Case temperature



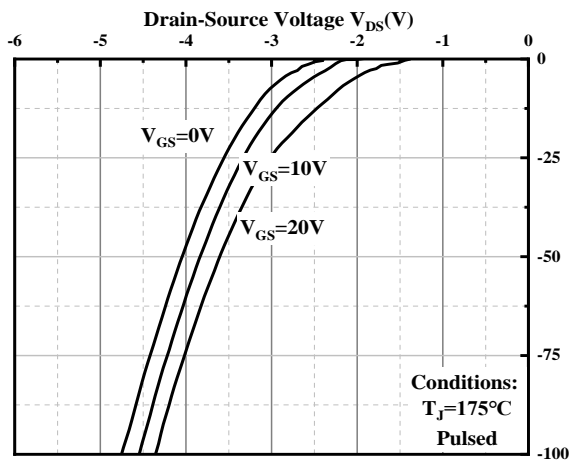
Safe Operation Area



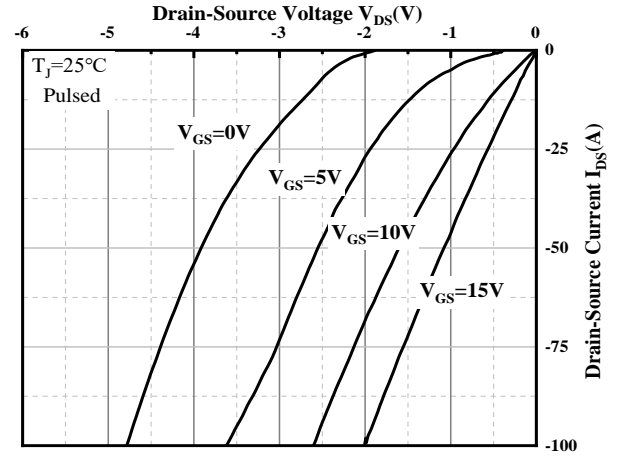
Transient Thermal Impedance



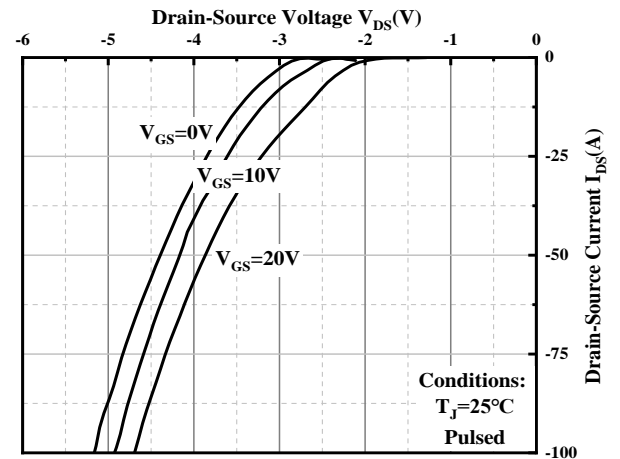
Drain-Source Current vs Drain-Source Voltage(25°C)



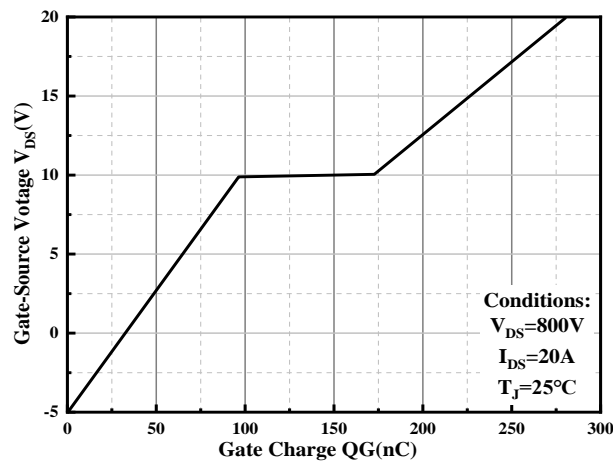
Body Diode Characteristic(25°C)



Drain-Source Current vs Drain-Source Voltage(175°C)



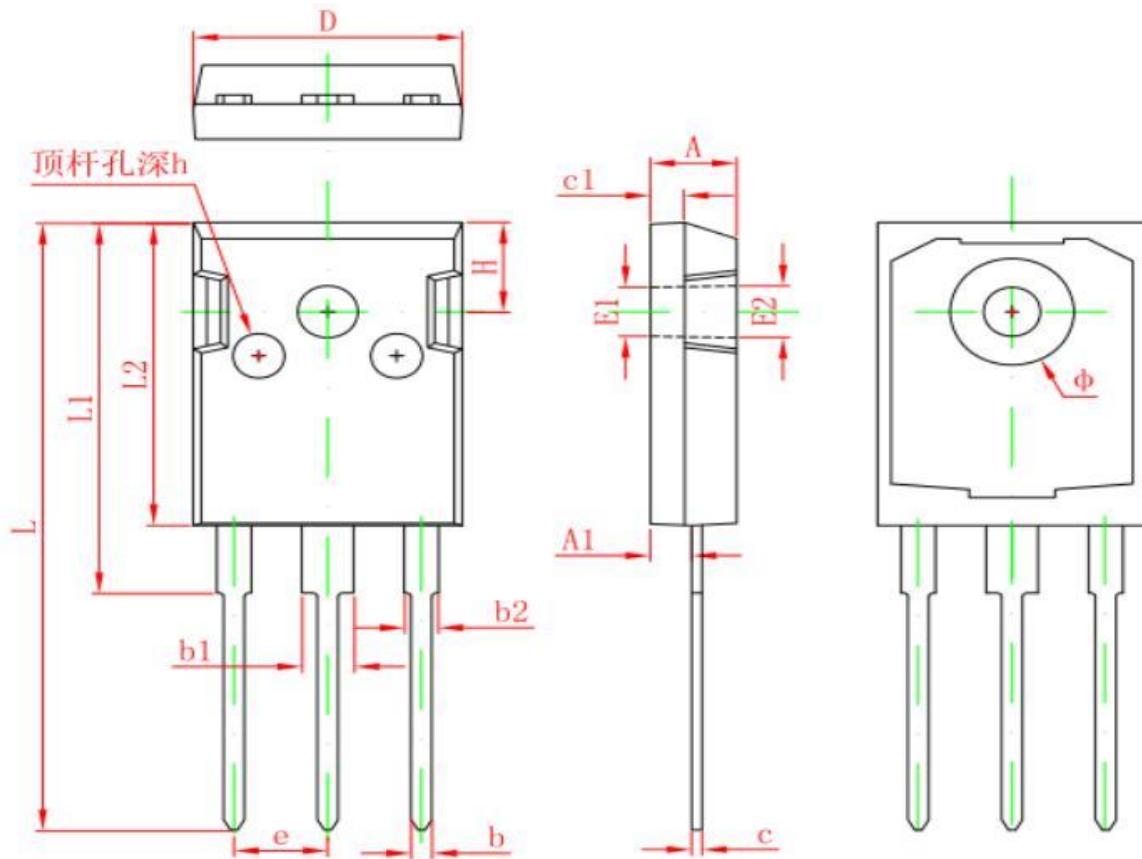
Body Diode Characteristic(175°C)



Gate Charge Characteristics



TO-247-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012

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