

Features

- Zero Forward Recovery Voltage
- Zero Reverse Recovery Current
- Excellent Surge Current Capability
- Temperature Independent Switching
- Positive Temperature Coefficient on VF
- High Frequency Operation

Application

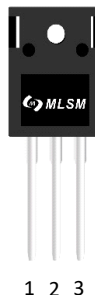
- Parallel Devices Without Thermal Runaway
- Power Factor Correction
- DC-AC Inverters
- DC-DC Inverters

Package Pin Definitions

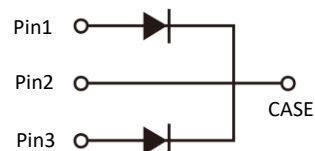
- Pin1-Anode
- Pin2-Cathode
- Pin3-Anode

Product Summary

V_{RRM}	I_F	Q_C
1200V	20A	110nC



TO-247-3L top view



Electrical Connection



Halogen-Free

Maximum Ratings(Ta=25°C unless otherwise noted)

Symbol	Parameter	Test condition	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltages	$T_C=25^{\circ}C$	1200	V
$*I_F$	Forward Current	$T_C=25^{\circ}C$	30	A
		$T_C=150^{\circ}C$	10	
$**I_F$		$T_C=25^{\circ}C$	60	
		$T_C=150^{\circ}C$	20	
$*I_{FSM}$	Non-Repetitive Forward Surge Current (Half Sine Pulse)	$T_C=25^{\circ}C, t_p=10ms$	90	A
$*P_{tot}$	Power Dissipation for $R_{th(j-c, max)}$	$T_C=25^{\circ}C, T_J=175^{\circ}C$	140	W
T_J, T_{stg}	Operating Junction and Storage Temperature		-55~+175	°C

Note: * per leg, ** per device

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.07	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
DA20C12A	TO-247-3L	DA20C12A	30	270	2,160	Tube

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

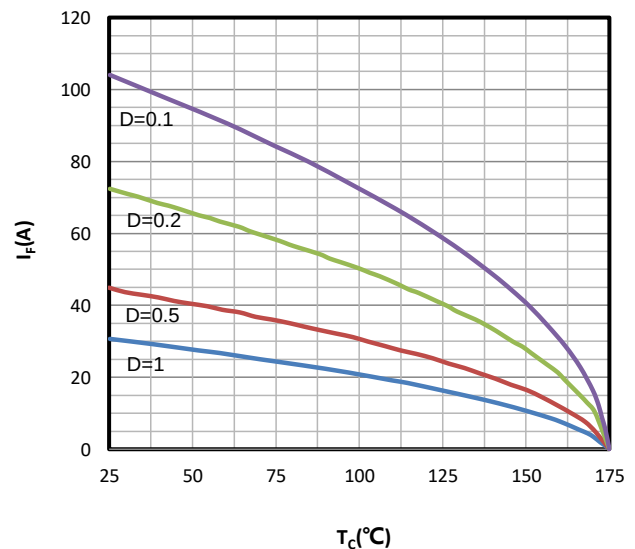
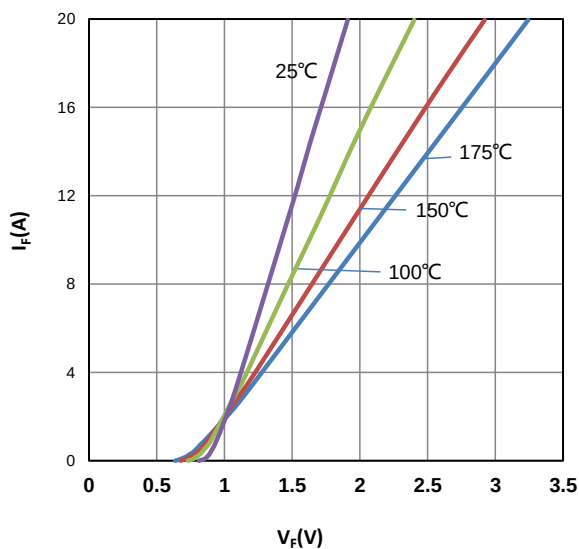
Static Characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_{DC}	DC Blocking Voltage	$I_R=500\mu\text{A}$	1200	-	-	V
V_F	Forward Voltage	$I_F=10\text{A}, T_J=25^{\circ}\text{C}$	-	1.4	1.6	V
		$I_F=10\text{A}, T_J=175^{\circ}\text{C}$	-	2.0	2.7	
I_R	Reverse Current	$V_R=1200\text{V}, T_J=25^{\circ}\text{C}$	-	10	100	μA
		$V_R=1200\text{V}, T_J=175^{\circ}\text{C}$	-	40	400	

AC Characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C	Total Capacitance	$V_R=1\text{V}, f=1\text{MHz}$	-	580	-	pF
		$V_R=400\text{V}, f=1\text{MHz}$	-	53	-	
		$V_R=800\text{V}, f=1\text{MHz}$	-	42	-	
Q_C	Total Capacitive Charge	$V_R=800\text{V}, T_J=25^{\circ}\text{C}$	-	55	-	nC
E_C	Capacitance Stored Energy	$V_R=800\text{V}$	-	27	-	μJ

Typical Operating Characteristics



Typical Operating Characteristics

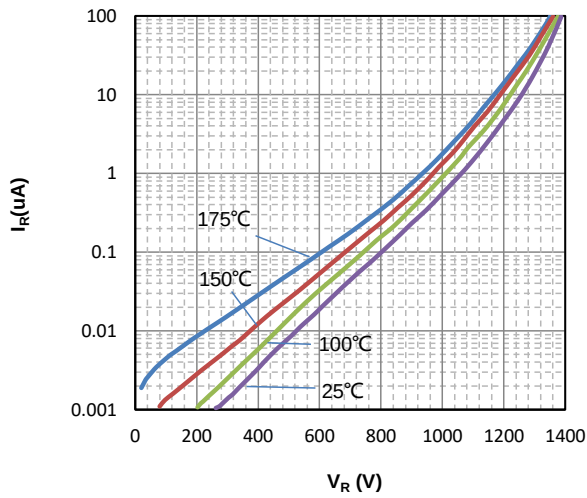


Fig3. Typical reverse current as function of reverse voltage

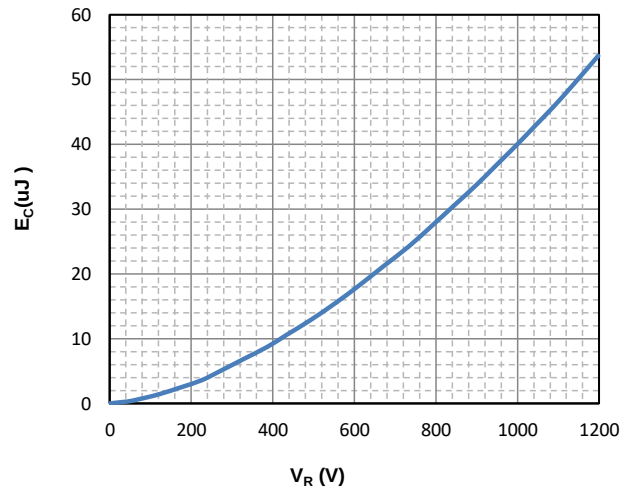


Fig4. Capacitance stored energy

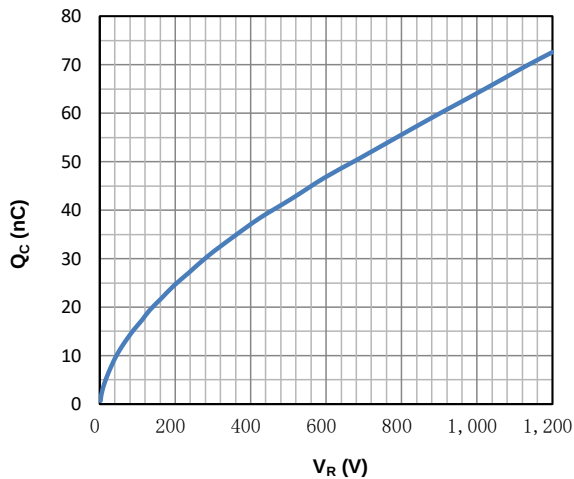


Fig5. Typical reverse charge as function of reverse voltage

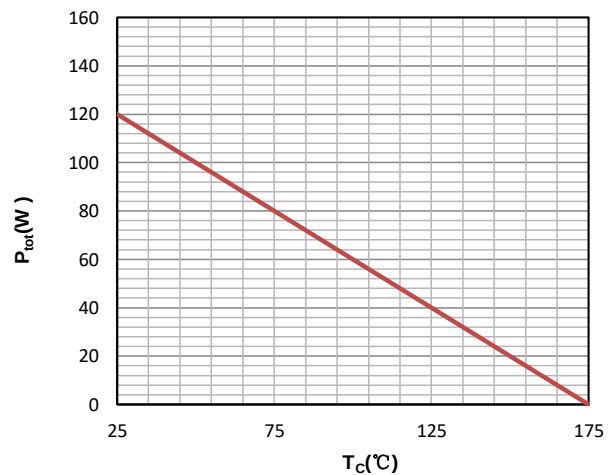


Fig6. Power dissipation as function of case temperature

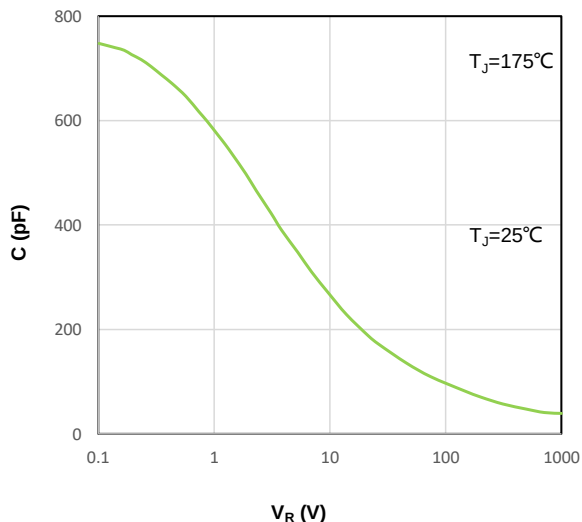


Fig7. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$; $f=1\text{ MHz}$

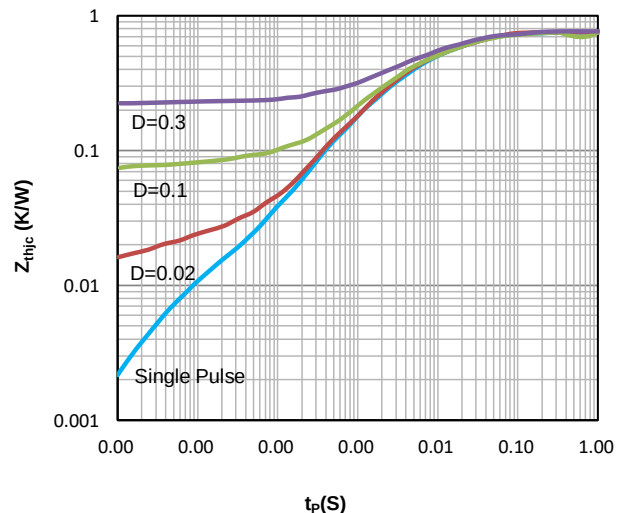
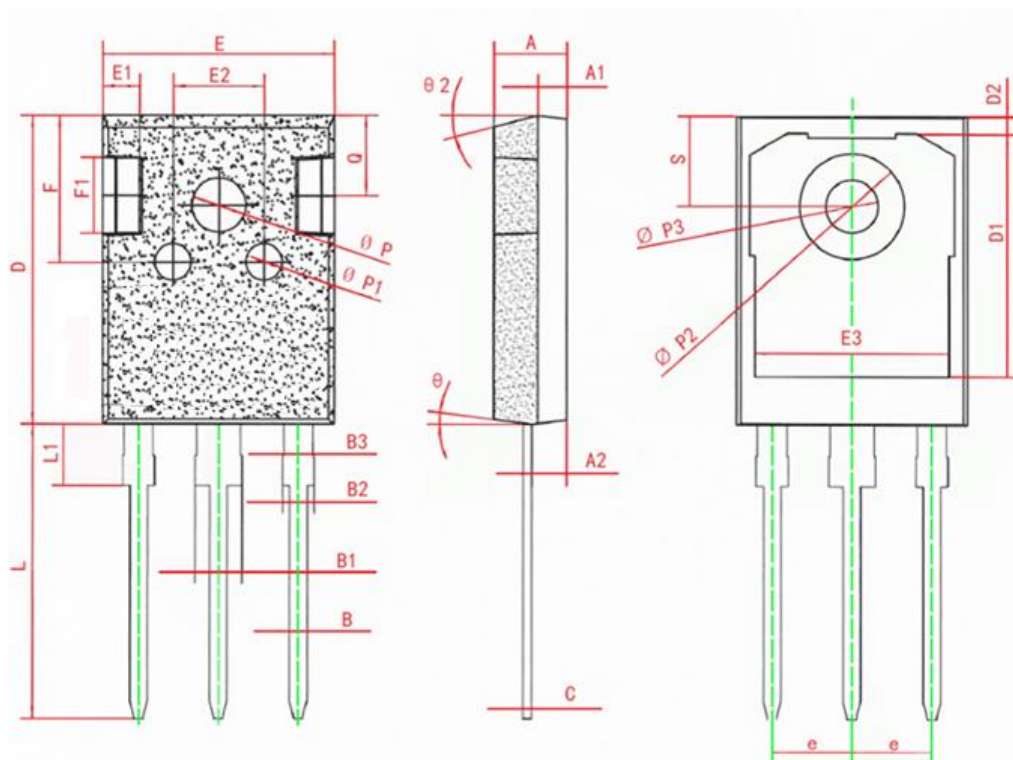


Fig8 Max. transient thermal impedance, $Z_{thjc}=f(t)$, parameter: $D=t/T$

TO-247-3L Package information


Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	4.900	5.100	0.192	0.200
A1	1.900	2.100	0.074	0.082
A2	2.300	2.500	0.090	0.098
B	1.140	1.240	0.044	0.048
B1	3.050	3.250	0.120	0.127
B2	2.000	2.200	0.078	0.086
B3	1.900	2.100	0.074	0.082
C	0.550	0.650	0.021	0.025
D	20.800	21.200	0.818	0.834
D1	16.350	16.750	0.643	0.659
D2	1.020	1.320	0.040	0.051
E	15.600	16.000	0.614	0.629
E1	2.400	2.600	0.094	0.102
E2	6.100	6.300	0.240	0.248
E3	13.060	13.460	0.514	0.529
F	9.800	10.200	0.385	0.401
F1	4.800	5.400	0.188	0.212
e	5.436BSC		0.214BSC	
L	19.720	20.120	0.776	0.792
L1	3.900	4.300	0.153	0.169
ØP	3.550	3.950	0.139	0.155
ØP1	2.400	2.600	0.094	0.102
ØP2	7.090	7.290	0.279	0.287
ØP3	3.500	3.700	0.137	0.145
S	6.050	6.250	0.238	0.246
Q	5.400	5.600	0.212	0.220
θ	5°	9°	5°	9°
θ1	5°	9°	5°	9°
θ2	13°	17°	13°	17°