

SILICON CARBIDE SCHOTTKY POWER RECTIFIER

DEVICES

MSiCSN05120 MSiCSS05120 MSiCST05120
MSiCSX05120

**5A / 1200V
 Silicon Carbide
 Schottky Rectifier**

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

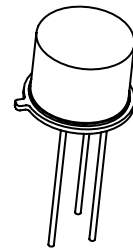
Parameters / Test Conditions	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RWM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
DC Blocking Voltage	V_{DC}	1200	V
Average Forward Current, 25°C	I_o	5	Apk
Peak Surge Forward Current @ $t_p = 8.3\text{ms}$, half sinewave, $I_o = 0$; $V_{RM} = 0$	I_{FSM}	30	Apk
Thermal Resistance, Junction to Case	$R_{\theta jc}$		$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta ja}$		$^\circ\text{C/W}$
Operating Junction Temperature	T_j	-65°C to $+225$	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65°C to $+225$	$^\circ\text{C}$

Note 1: Derate linearly @ tbd

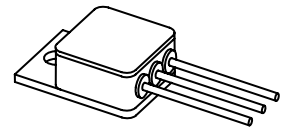
ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Forward Voltage $I_F = 1\text{A}$, $T_j = 25^\circ\text{C}^*$ $I_F = 2.5\text{A}$, $T_j = 25^\circ\text{C}^*$ $I_F = 5.0\text{A}$, $T_j = 25^\circ\text{C}^*$	V_F		1.2 1.6 1.8	V
Reverse Current $V_R = 1200\text{V}$, $T_j = 25^\circ\text{C}$ $V_R = 1200\text{V}$, $T_j = 175^\circ\text{C}$	I_R		50 100	μA
Junction Capacitance $V_R = 0\text{V}$ $f = 1\text{MHz}$	C_j		500	pF

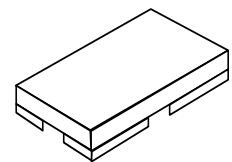
* Pulse test: Pulse width 300 μsec , Duty cycle 2%



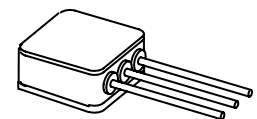
**MSiCST05120
 TO-39**



**MSiCSN05120
 TO-257**

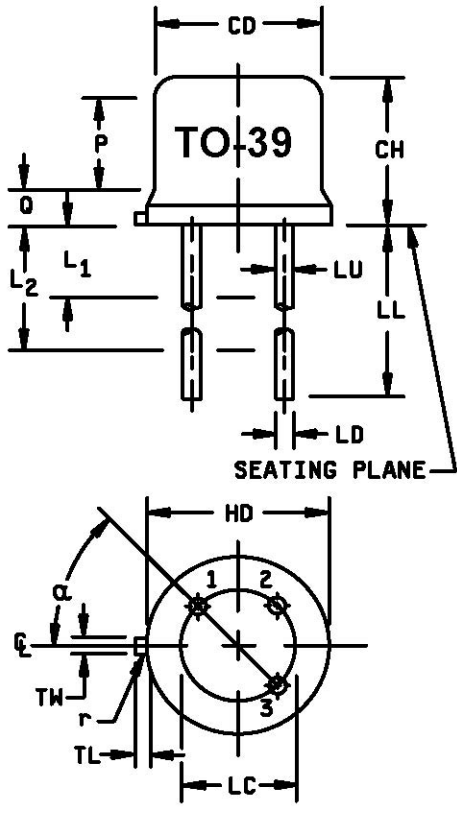


**MSiCSS05120
 U-4
 (SURFACE MOUNT: SMD.22)**



**MSiCSX05120
 TO-257 (Tabless)**

PACKAGE DIMENSIONS

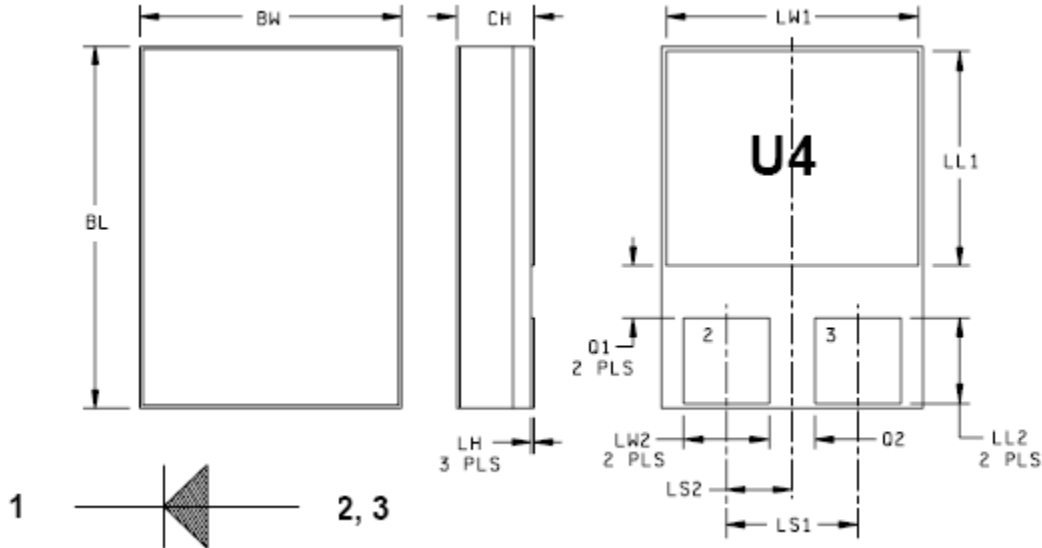


Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.335	7.75	8.51	
CH	.160	.180	4.07	4.57	
HD	.335	.370	8.51	9.40	
LC	.200 TP		5.08 TP		7
LD	.016	.021	0.41	0.53	8, 9
LL	.500	.750	12.7	19.05	8, 9
LU	.016	.019	0.41	0.48	8, 9
L1		.050		1.27	8, 9
L2	.250		6.35		8, 9
P	.100		2.54		6
Q		.040		1.02	5
r		.010		0.254	10
TL	.029	.045	0.74	1.14	
TW	.028	.034	0.72	0.86	
α	45° TP		45° TP		7
Term 1	Anode				
Term 2	Open (no connection)				
Term 3	Cathode (case)				

NOTES:

- Dimensions are in inches.
- Millimeters are given for general information only.
- Beyond radius (r) maximum, TW shall be held for a minimum length of .011 inch (0.279 mm).
- Dimension TL measured from maximum HD.
- Outline in this zone is not controlled.
- Dimension CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
- Leads at gauge plane $.054 +.001, -.000$ inch ($1.37 +0.03, -0.00$ mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC. The device may be measured by direct methods.
- LU applies between L1 and L2. LD applies between L2 and LL minimum. Diameter is uncontrolled in L1 and beyond LL minimum.
- All three leads.
- Radius (r) applies to both inside corners of tab.
- Cathode is electrically connected to the case.
- In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions (TO-205AF - formerly low profile TO-39).

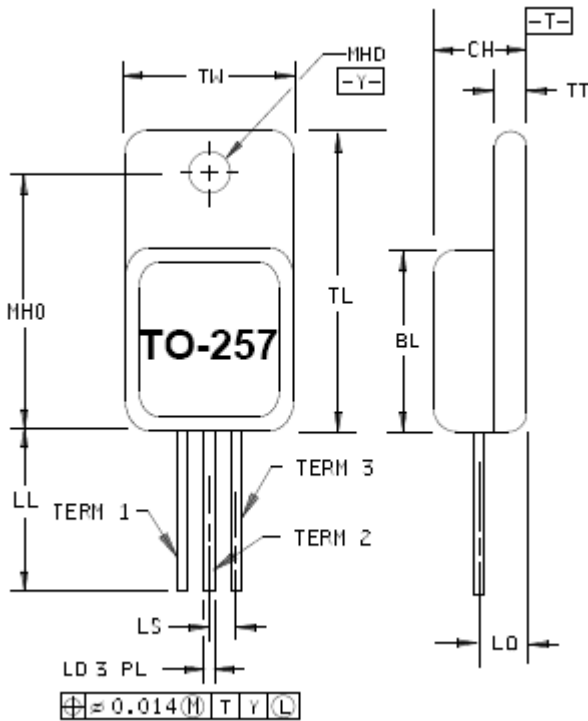


NOTE:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	0.215	0.225	5.46	5.72
BW	0.145	0.155	3.68	3.94
CH	0.049	0.075	1.24	1.91
LH	-	0.020	-	0.508
LL1	0.085	0.125	2.16	3.17
LL2	0.045	0.075	1.14	1.90
LS1	0.070	0.095	1.78	2.41
LS2	0.035	0.048	0.889	1.21
LW1	0.135	0.145	3.43	3.68
LW2	0.047	0.057	1.19	1.45
Q1	0.030	0.070	0.762	1.78
Q2	0.020	0.035	0.508	0.88
TERM 1	Cathode			
TERM 2, 3	Anode			

FIGURE 2. Physical dimensions and configuration (U4).

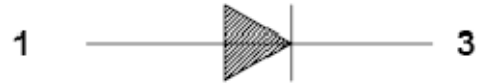
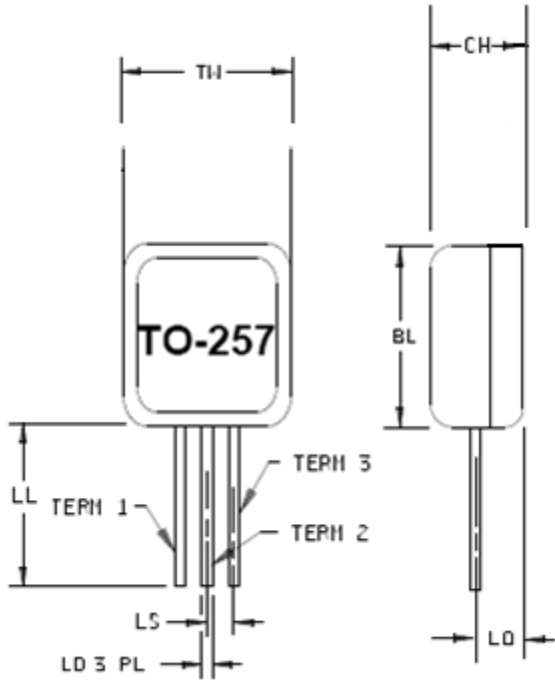


NOTE:

1. Dimensions are in inches.
2. Inch equivalents are given for general information only.
3. Glass meniscus included in dimension TL and BL.

Ltr	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
BL	10.41	10.92	.410	.430
CH	4.83	5.08	.190	.200
LD	0.64	0.89	.025	.035
LL	12.82	15.11	.505	.595
LO	3.05 BSC		.120 BSC	
LS	2.54 BSC		.100 BSC	
MHD	3.56	3.81	.140	.150
MHO	13.39	13.64	.527	.537
TL	16.38	16.89	.6450	.665
TT	0.89	1.14	.035	.045
TW	10.41	10.67	.410	.420
TERM 1	SEE SCHEMATIC			
TERM 2	OPEN (No connection)			
TERM 3	SEE SCHEMATIC			

FIGURE 3. Physical dimensions TO-257 and configuration.



NOTE:

1. Dimensions are in inches.
2. Inch equivalents are given for general information only.
3. Glass meniscus included in dimension TL and BL.
4. Tabless TO-257 package.

Ltr	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
BL	10.41	10.92	.410	.430
CH	4.83	5.08	.190	.200
LD	0.64	0.89	.025	.035
LL	12.82	15.11	.505	.595
LO	3.05 BSC		.120 BSC	
LS	2.54 BSC		.100 BSC	
TW	10.41	10.67	.410	.420
TERM 1	SEE SCHEMATIC			
TERM 2	OPEN (No connection)			
TERM 3	SEE SCHEMATIC			

FIGURE 4. Physical dimensions Tabless TO-257 and configuration