1A Super-Fast Recovery Rectifier

Product Summary

Parameter	Rating
$I_{F(AV)}$	1 A
V_{RRM}	200 V to 600 V
V_F Max @ I_F	0.95V to 1.7 V
I_R Max	5 µA
t_{rr}	35nS
T_J Max	150 °C

SMA

Features

- AEC-Q101 Qualified
- Super fast reverse recovery time
- Low leakage current
- High forward surge capability
- Glass passivated chip junction
- Low switching losses, high efficiency

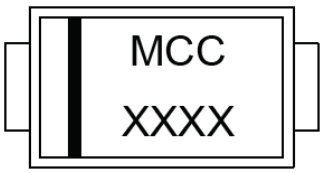
Applications

- For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

Mechanical Data

- Package: SMA
- Moisture Sensitivity: Level 1 ,per J-STD-020
- Halogen Free. “Green” Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHSCompliant. See Ordering Information)

Body Marking and Pin Layout

Marking Code	Simplified Outline	Internal Structure
	 Transparent top view	

MCC = Manufacturers’ logo

XXXX = Product marking code (ex: ES1D for ES1DHE3-L; ES1G for ES1GHE3-L; ES1J for ES1JHE3-L)

Ordering Information

Product Name	Reel Size	Packing Type	Qty/Reel
ES1xHE3-LTP	13’’	Tape & Reel	5,000

For packaging details, visit our website at https://www.mccsemi.com/Package/List

Note:

1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and 1000ppm antimony compounds.

Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating			Unit
			ES1DHE3-L	ES1GHE3-L	ES1JHE3-L	
Peak Repetitive Reverse Voltage		V_{RRM}	200	400	600	V
Working Peak Reverse Voltage		V_{RWM}	200	400	600	
DC Blocking Voltage		V_R	200	400	600	
RMS Voltage		V_{RMS}	140	280	420	
Average Rectified Forward Current	T_C=120°C	$I_{F(AV)}$	1			A
Non-Repetitive Peak Surge Current	8.3ms Half Sine Wave, T_J = 25°C	I_{FSM}	30			A
	1ms Square Wave, T_J = 25°C		60			
Rating for Fusing, 1ms≤t≤8.3ms		I^2t	3.735			A^2S
Operating Junction Temperature Range		T_J	-55 to +150			°C
Storage Temperature Range		T_{STG}	-55 to +150			°C

Thermal characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Thermal Resistance from Junction to Case (Note 2)	$R_{\theta JC}$	15	°C/W
Thermal Resistance from Junction to Lead (Note 2)	$R_{\theta JL}$	22	
Thermal Resistance from Junction to Ambient (Note 2)	$R_{\theta JA}$	82	

Note:

2. Mounted on P.C.B. with 5mm*5mm copper pad areas.

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Test Conditions		Symbol	Min	Typ	Max	Unit
Forward Voltage	I_F=1A; T_J=25°C	ES1DHE3-L	V_F			0.95	V
		ES1GHE3-L				1.30	
		ES1JHE3-L				1.70	
Reverse Current	at Rated V_R; T_J=25°C		I_R			5	µA
	at Rated V_R; T_J=125°C					100	
Reverse Recovery Time	I_F=0.5A; I_R=1.0A; I_{rr}=0.25A; T_J=25°C		t_{rr}			35	nS
Junction Capacitance	V_R=4V; f=1MHz; T_J=25°C	ES1DHE3-L	C_J		20		pF
		ES1GHE3-L ES1JHE3-L			12		

Curve Characteristics

Fig. 1 – Forward Current Derating Curve

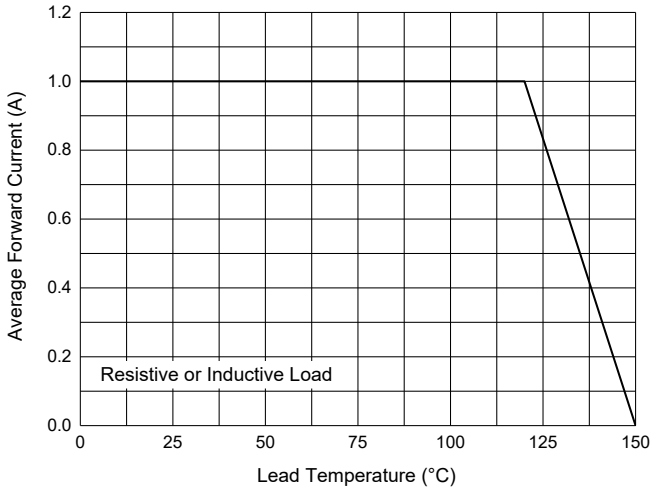


Fig. 2 – Maximum Non-repetitive Peak Forward Surge Current

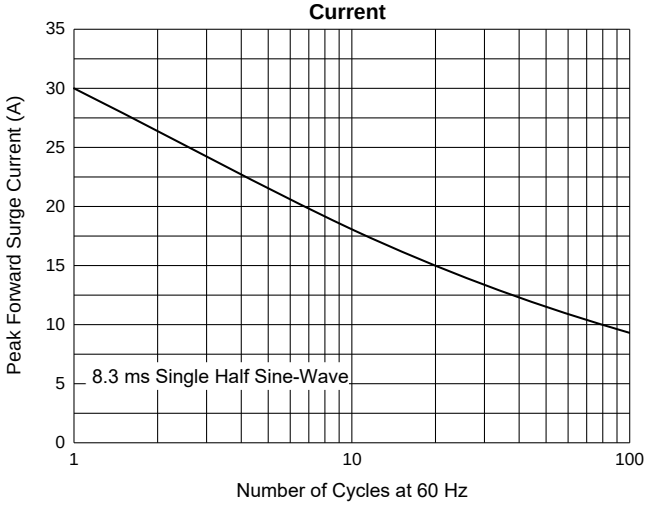


Fig. 3 – Typical Forward Characteristics

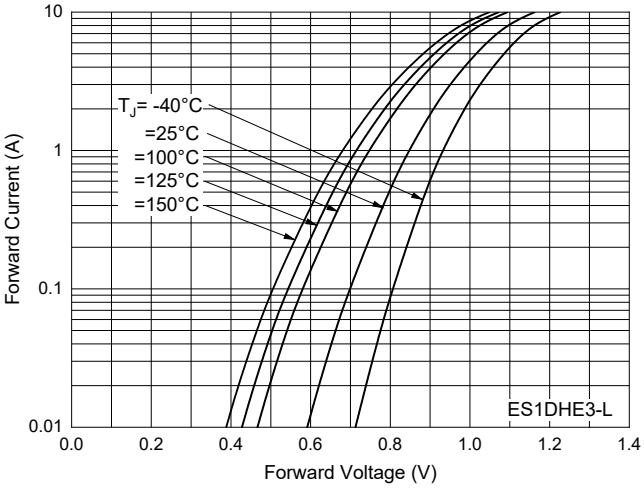


Fig. 4 – Typical Forward Characteristics

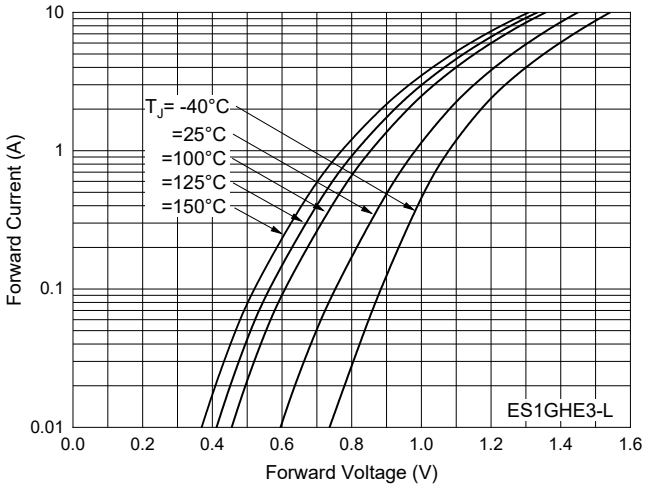


Fig.5 – Typical Forward Characteristics

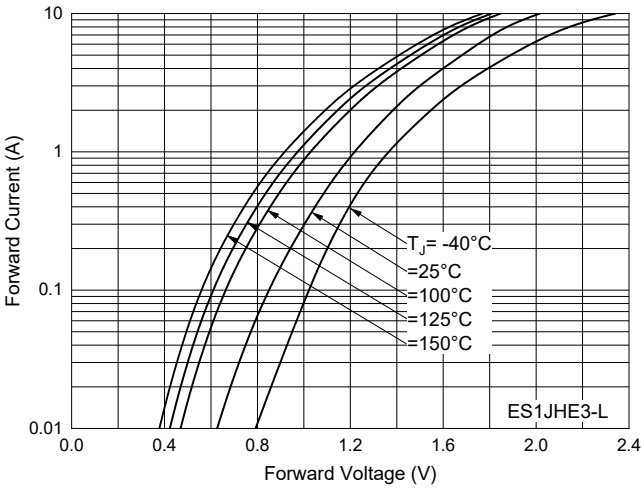
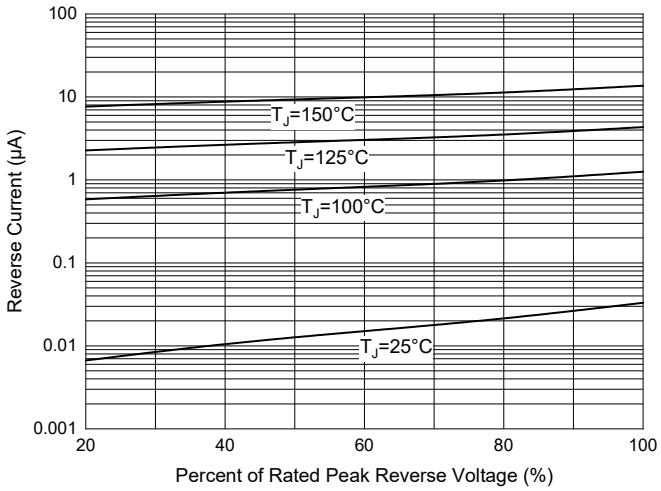
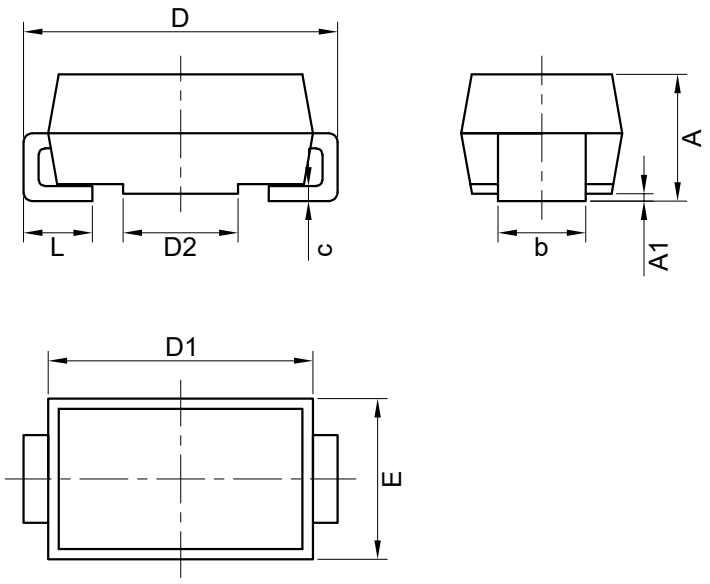


Fig. 6 – Typical Reverse Leakage Characteristics

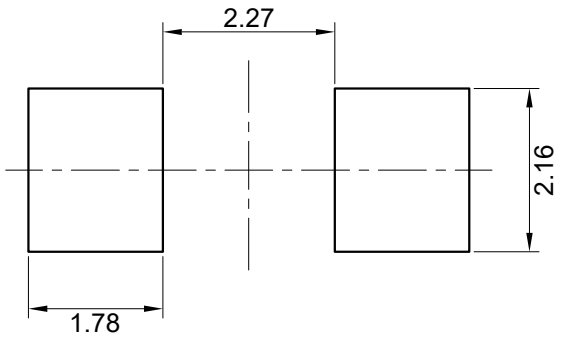


Package Outline



DIM	INCH		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.075	0.091	1.90	2.30	
A1	0.002	0.008	0.05	0.20	
b	0.050	0.064	1.27	1.63	
c	0.006	0.012	0.15	0.31	
D	0.189	0.208	4.80	5.28	
D1	0.157	0.187	4.00	4.75	
D2	0.067	0.083	1.70	2.10	
E	0.094	0.115	2.40	2.92	
L	0.030	0.060	0.76	1.52	

Suggested Pad Layout (Unit:mm)



Notes:
1. The suggested land pattern dimensions have been provided for reference only.
2. For further information, please refer to document IPC-7351.

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