

1A Super-Fast Recovery Rectifier

Product Summary

Parameter	Rating
$I_{F(AV)}$	1 A
V_{RRM}	200 V to 600 V
$V_F \text{ Max @ } I_F$	0.95V to 1.7 V
$I_R \text{ Max}$	5 μ A
t_{rr}	35nS
$T_J \text{ Max}$	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.

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 Maximum Ratings ($T_A=25^\circ\text{C}$ 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	$T_C=120^\circ\text{C}$	$I_{F(AV)}$	1			A
Non-Repetitive Peak Surge Current	8.3ms Half Sine Wave, $T_J = 25^\circ\text{C}$	I_{FSM}	30			A
	1ms Square Wave, $T_J = 25^\circ\text{C}$		60			
Rating for Fusing, $1\text{ms} \leq t \leq 8.3\text{ms}$		I^2t	3.735			A^2S
Operating Junction Temperature Range		T_J	-55 to +150			$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-55 to +150			$^\circ\text{C}$

 Thermal characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Thermal Resistance from Junction to Case ^(Note 2)	$R_{\theta JC}$	15	$^\circ\text{C}/\text{W}$
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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

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

Curve Characteristics

Fig. 1 – Forward Current Derating Curve

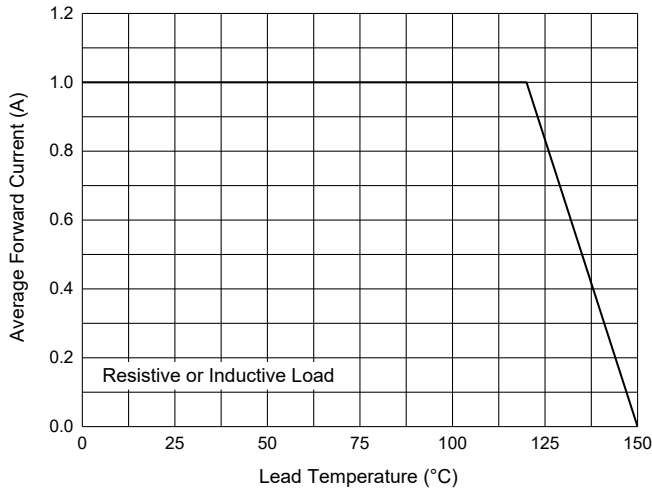


Fig. 2 – Maximum Non-repetitive Peak Forward Surge Current

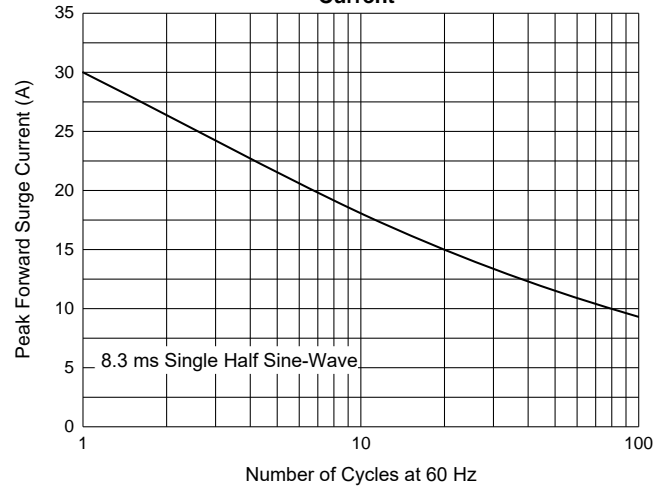


Fig. 3 – Typical Forward Characteristics

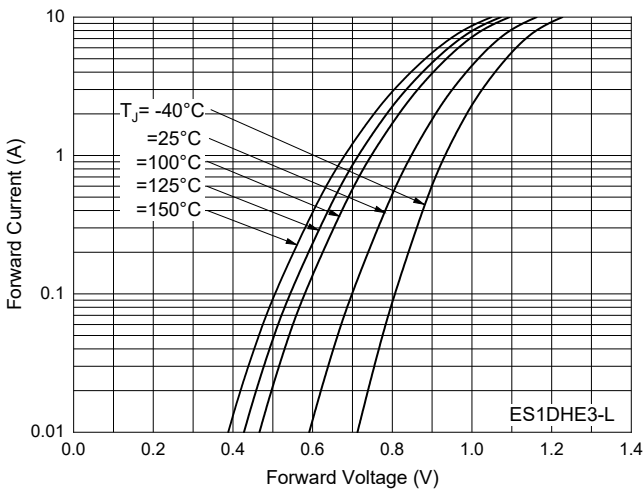


Fig. 4 – Typical Forward Characteristics

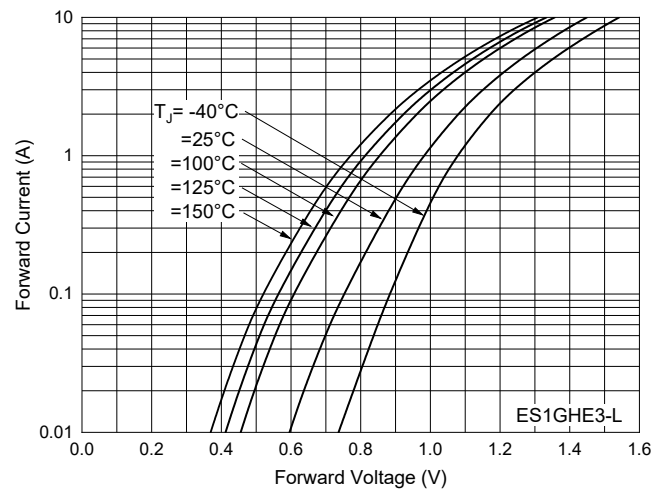


Fig. 5 – Typical Forward Characteristics

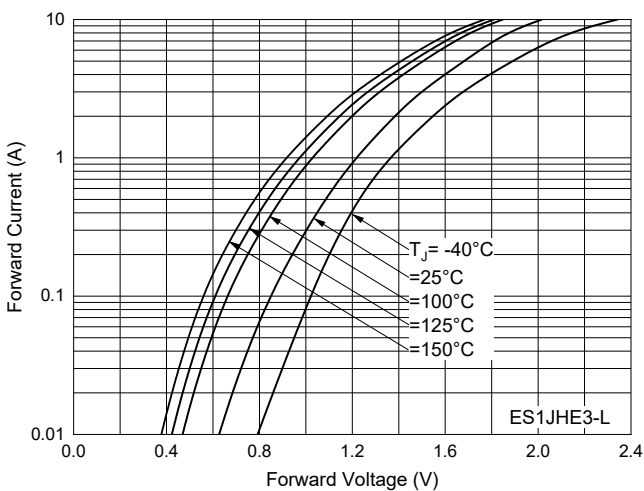
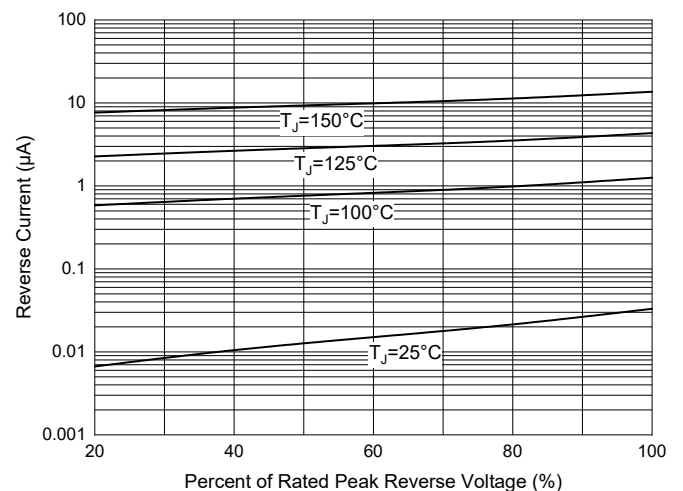
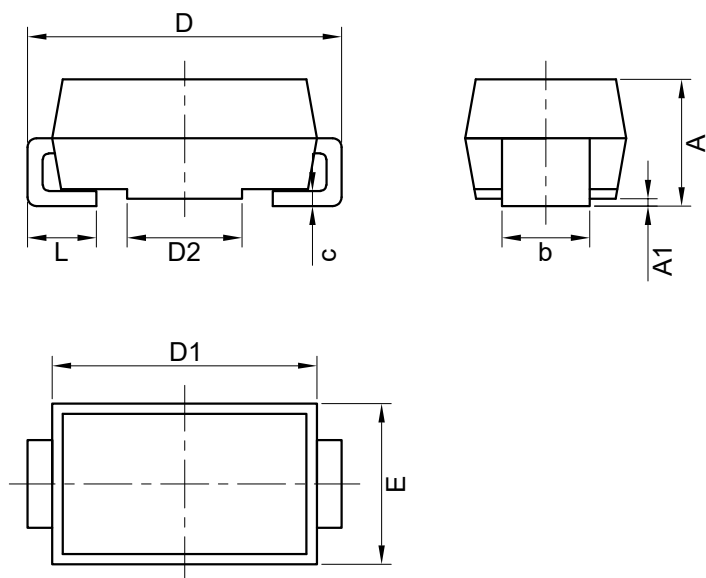


Fig. 6 – Typical Reverse Leakage Characteristics

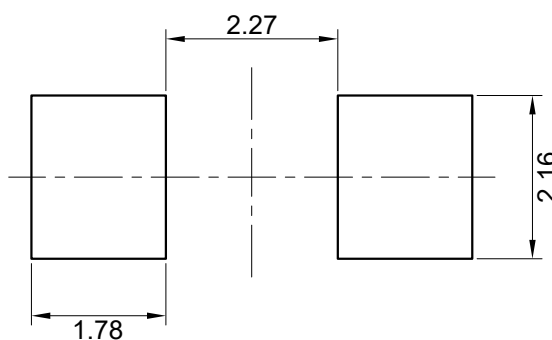


Package Outline



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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