Surface Mount Ultra Fast Recovery Rectifier

Features

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

Typical Applications

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

Mechanical Date

- **Package:** SOD-123HE
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

■Maximum Ratings (T_a=25 Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	U1AE	U1BE	U1CE	U1DE	U1FE	U1GE	U1HE	U1JE
Device marking code			U1AE	U1BE	U1CE	U1DE	U1FE	U1GE	U1HE	U1JE
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	V	50	100	150	200	300	400	500	600
Maximum RMS Voltage	V_{RMS}	V	35	70	105	140	210	280	350	420
Maximum DC blocking Voltage	V_{DC}	V	50	100	150	200	300	400	500	600
Average rectified output current @60Hz sine wave, Resistance load, TL (FIG.1)	IO	A	1.0							
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave,1 cycle, Tj=25	I_{FSM}	A	30							
Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25			60							
Current squared time @1ms≤t≤8.3ms Tj=25	I^2t	A^2s	3.735							
Storage temperature	T_{stg}	-	-55 ~ +150							
Junction temperature	T_j									

■Electrical Characteristics (T_a=25 Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	U1AE	U1BE	U1CE	U1DE	U1FE	U1GE	U1HE	U1JE
Maximum instantaneous forward voltage	V_F	V	I_{FM}=1.0A	0.92				1.25		1.7	
Maximum reverse recovery time	t_{rr}	ns	I_F=0.5A,I_R=1.0A, I_{rr}=0.25A	25						35	
Maximum DC reverse current at rated DC blocking voltage	I_R	μA	Tj =25 -	5							
			Tj =125 -	50							
Typical junction capacitance	Cj	pF	Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C	17				15		16	

■Dynamic Characteristics

◆ U1AE THRU U1DE

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25	I_F=1A È di/dt=-50A/us V_{RM}=30V	-	27	-
			Tj=25	I_F=1A di/dt=-200A/us V_{RM}=100V	-	18	-
			Tj=125		-	24	-
Peak recovery current	I_{RRM}	A	Tj=25		-	2.4	-
			Tj=125		-	3.9	-
Reverse recovery charge	Qrr	nC	Tj=25		-	21.6	-
			Tj=125		-	46.6	-

◆ U1FE THRU U1GE

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25	I_F=1A È di/dt=-50A/us V_{RM}=30V	-	26	-
			Tj=25	I_F=1A di/dt=-200A/us V_{RM}=200V	-	22	-
			Tj=125		-	31	-
Peak recovery current	I_{RRM}	A	Tj=25		-	1.9	-
			Tj=125		-	3.5	-
Reverse recovery charge	Qrr	nC	Tj=25		-	21.1	-
			Tj=125		-	54.9	-

◆ U1HE THRU U1JE

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25	I_F=1A È di/dt=-50A/us V_{RM}=30V	-	38	-
			Tj=25	I_F=1A di/dt=-200A/us V_{RM}=400V	-	32	-
			Tj=125		-	52	-
Peak recovery current	I_{RRM}	A	Tj=25		-	2.9	-
			Tj=125		-	4.7	-
Reverse recovery charge	Qrr	nC	Tj=25		-	45.8	-
			Tj=125		-	121.9	-

■Thermal Characteristics (T_a=25 Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	U1AE	U1BE	U1CE	U1DE	U1FE	U1GE	U1HE	U1JE
Typical Thermal resistance	$R_{\theta J-A}$(1)	/W	65							
	$R_{\theta J-L}$(1)		25							
	$R_{\theta J-C}$(1)		20							

Note:
(1)Thermal resistance between junction and ambient and between junction and lead mounted on P.C.B with 3mm*3mm copper pad areas.

■ Characteristics (Typical)

FIG.2: Forward Surge Current Capability

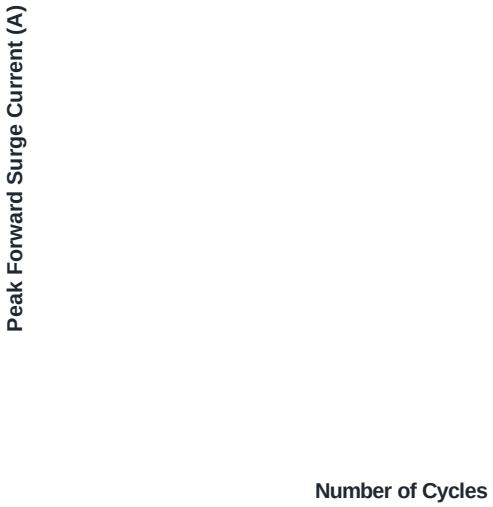
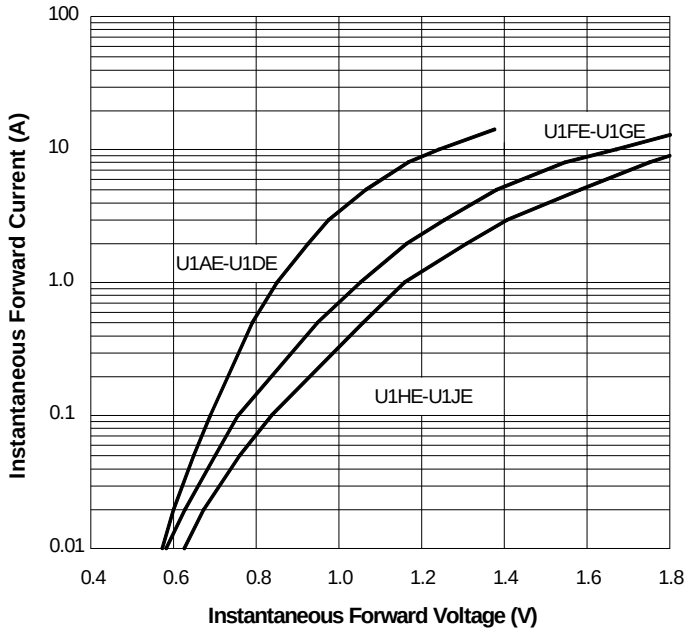
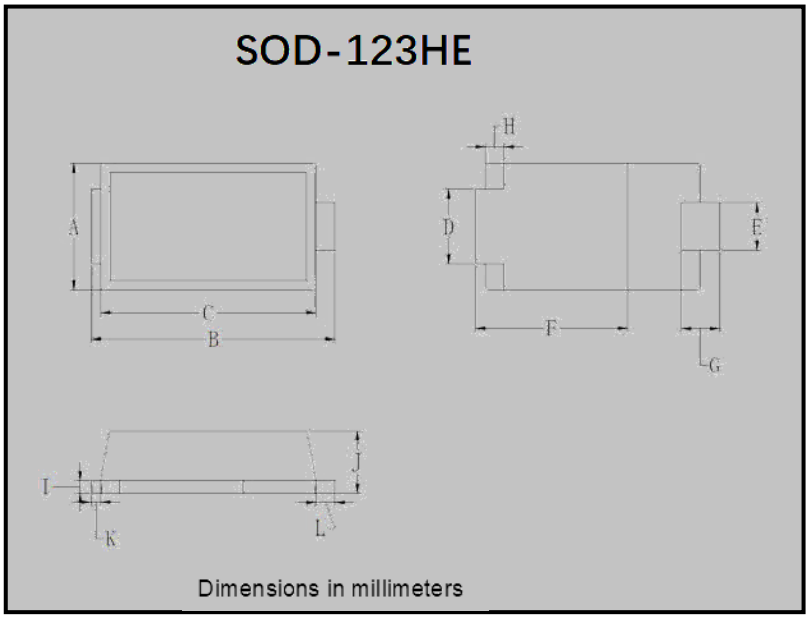


FIG.3: Typical Forward Characteristics

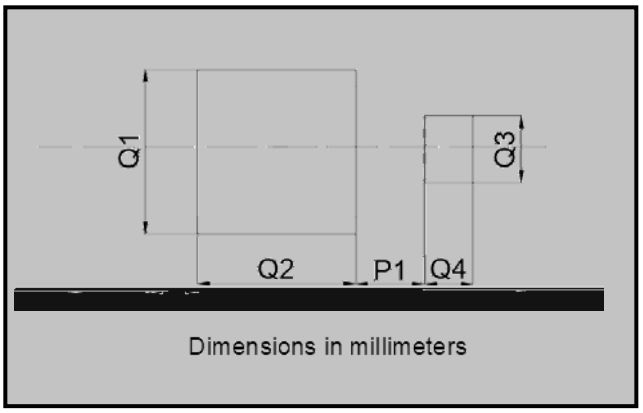


■ Outline Dimensions



SOD-123HE		
Dim	Min	Max
A	1.88	2.18
B	3.70	4.00
C	3.19	3.61
D	1.05	1.35
E	0.61	0.91
F	2.20	2.90
G	0.40	0.80
H	0.30 TYP	
I	0.10	0.30
J	0.85	1.15
K	0.00	0.30
L	0.15	0.45

■ Suggested pad layout



SOD-123HE	
Dim	Millimeters
P1	0.64
Q1	2.54
Q2	2.67
Q3	1.27
Q4	0.76

Disclaimer

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