BORN SEMICONDUCTOR

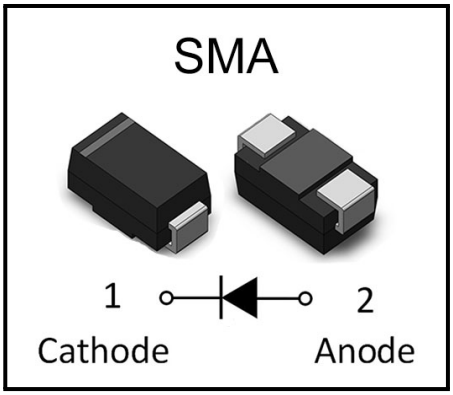
US1A-US1M

Fast Recovery Rectifier Diode

Features

- Super fast switching time for high efficinency
- Low forward voltage drop
- High current capability
- High reliability
- High surge current capability
- Epitaxial construction

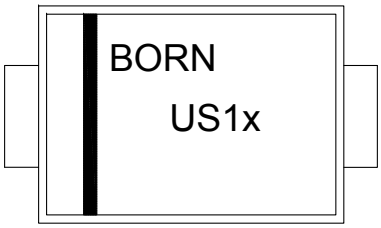
Package



Description

- Case: molded plastic
- Polarity: Color band denotes cathode
- Package: SMA Plastic Package

Making Code



Ordering information

Part Number	US1A	US1B	US1D	US1G	US1J	US1K	US1M
Marking	US1A	US1B	US1D	US1G	US1J	US1K	US1M
Base qty	5K	5K	5K	5K	5K	5K	5K

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Specifications are subject to change without notice.
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Revision: 2022-Jan-1-A

US1A-US1M

Fast Recovery Rectifier Diode

Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Characteristics	US1A	US1B	US1D	US1G	US1J	US1K	US1M	Unit
V_{RRM}	Maximum Recurrent Peak Reverse Voltage	50	100	200	400	600	800	1000	V
V_{RMS}	Maximum RMS Voltage	35	70	140	280	420	560	700	V
V_{DC}	Maximum DC Blocking Voltage	50	100	200	400	600	800	1000	V
$I_{(AV)}$	Maximum Average Forward Rectified Current at T_L = 110°C	1.0							A
I_{FSM}	Peak Forward Surge Current 8.3ms Single half sine-waveSuperimposed on Rated Load	30							A
V_F	Maximum Forward Voltage at 1.0A DC	1.0			1.3	1.7			V
I_R	Maximum DC Reverse Current T_J = 25°C at Rated DC Blocking Voltage T_J = 125°C	10 50							uA
T_{RR}	Maximum Reverse Recovery Time(Note1)	50				75			nS
C_J	Typical Junction Capacitance(Note2)	17							pF
$R_{\theta JA}$	Typical Thermal Resistance(Note3)	60							°C/W
T_J	Operating Temperature Range	-55 to +150							°C
T_{STG}	Storage Temperature Range	-55 to +150							°C

Notes:(1)Reverse recovery condition I_F=0.5A,I_R=1.0A,I_{RR}=0.25A.

(2) Measured at 1.0 MHz and applied reverse voltage of 4.0V DC.

(3)Thermal resistance junction to ambient.

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US1A-US1M

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Typical Performance Characteristics(T_J = 25 °C, unless otherwise noted)

Figure 1: Typical Forward Characteristics

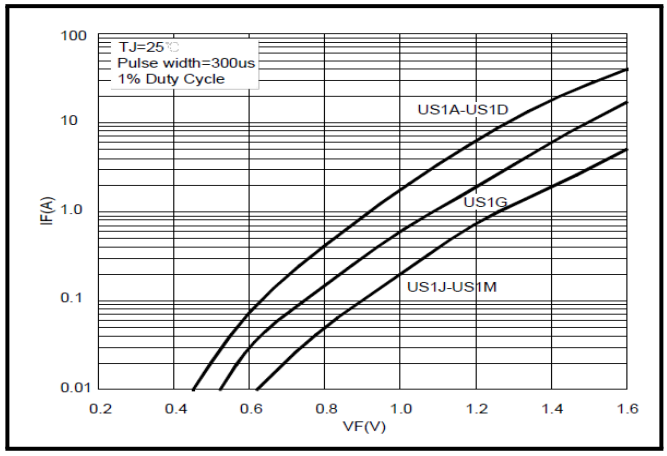


Figure 2: Typical Junction Capacitance

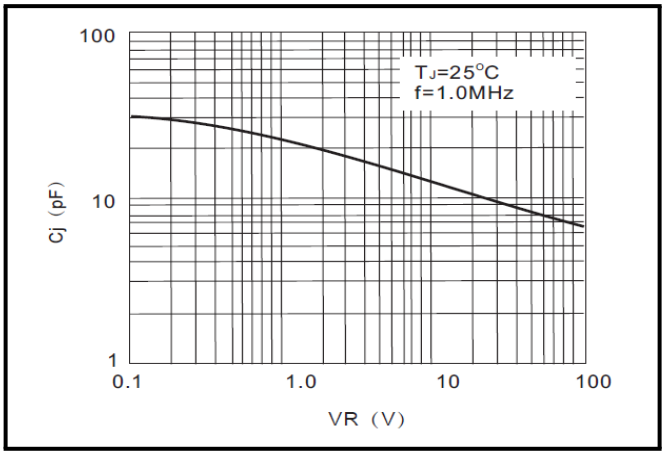


Figure 3: Forward Current Derating Curve

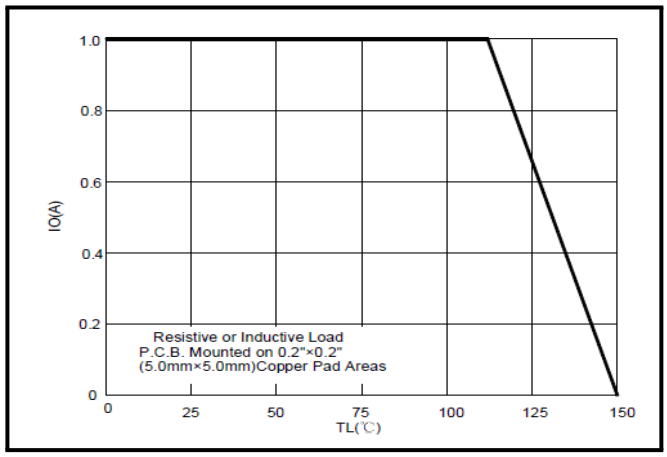


Figure 4: Peak Forward Surge Current

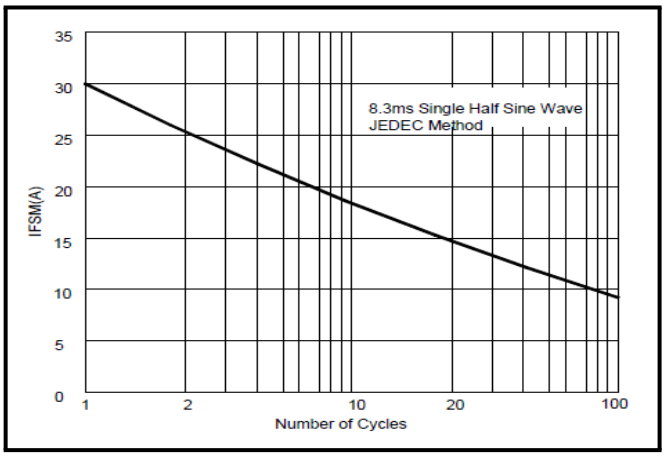
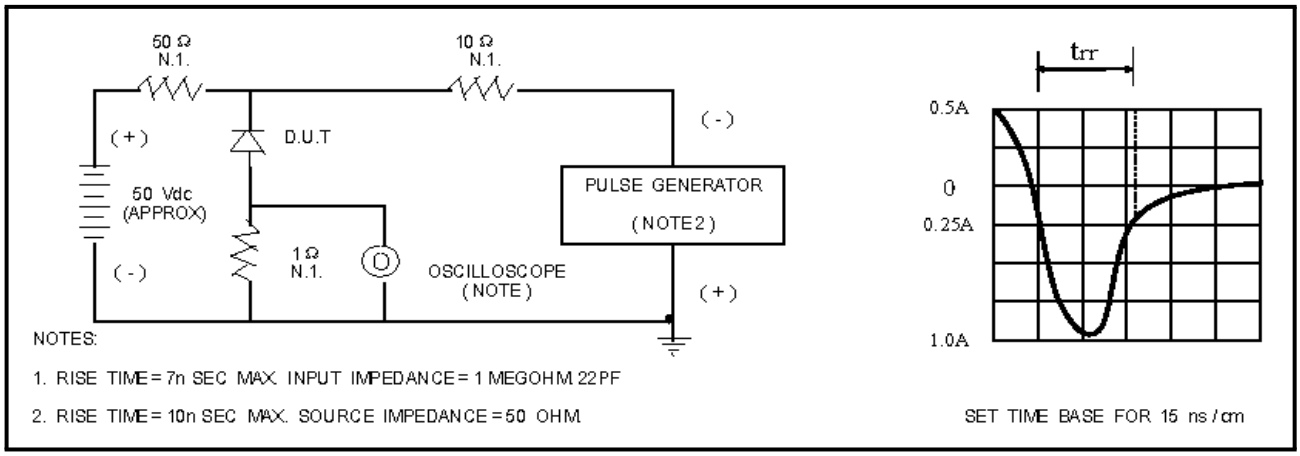


Figure 5: Test Circuit Diagram And Recover Time Characteristic



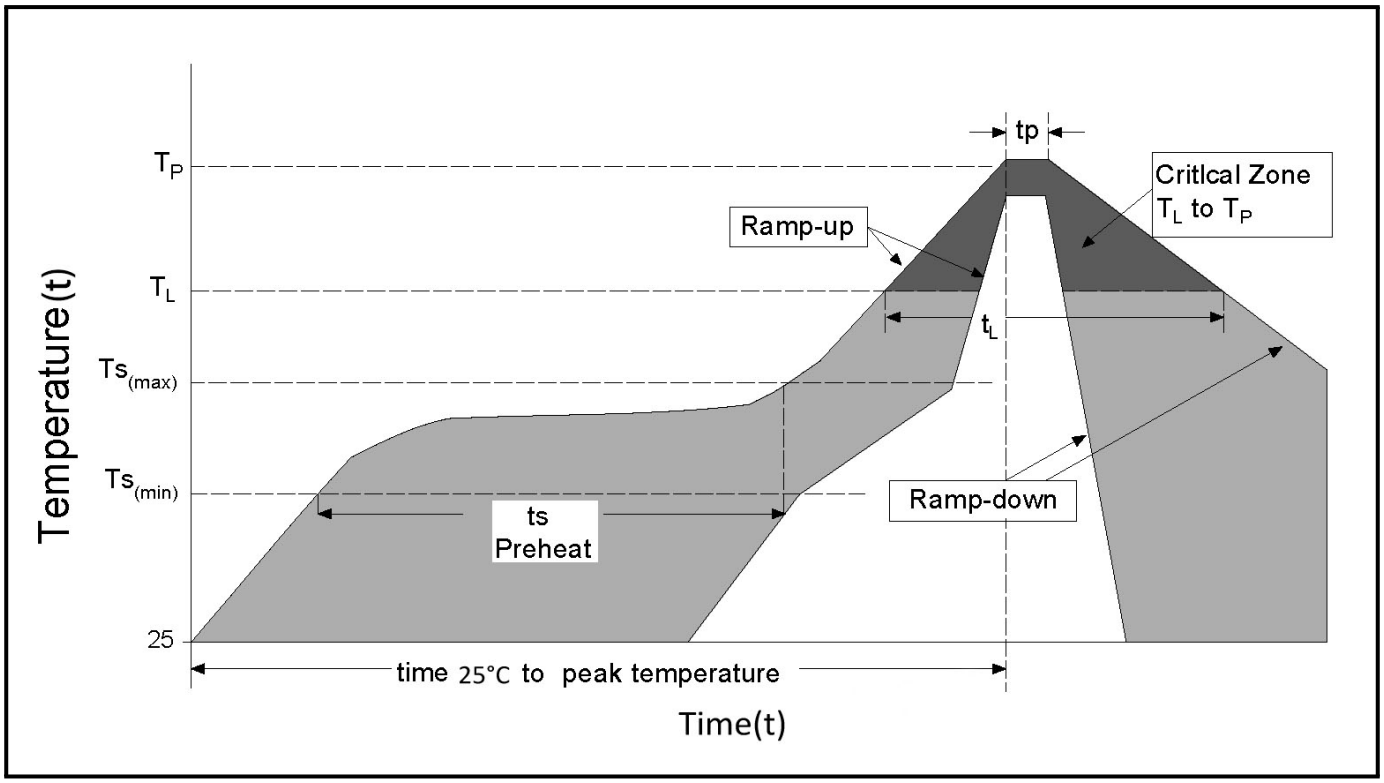
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US1A-US1M

Fast Recovery Rectifier Diode

Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min (T_S(min))	150°C
	- Temperature Max (T_S(max))	200°C
	- Time (min to max) (t_S)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
T_S(max) to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 -150 secs
Peak Temperature (T_P)		$260^{+0/-5°C}$
Time within 5°C of actual peak Temperature (t_p)		20 -40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

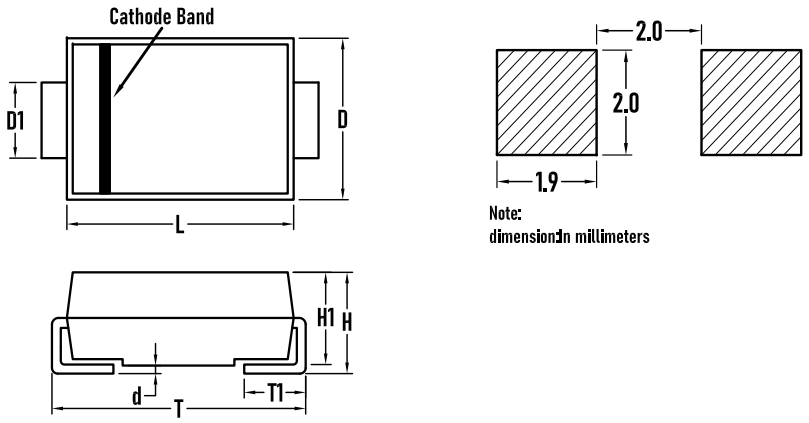
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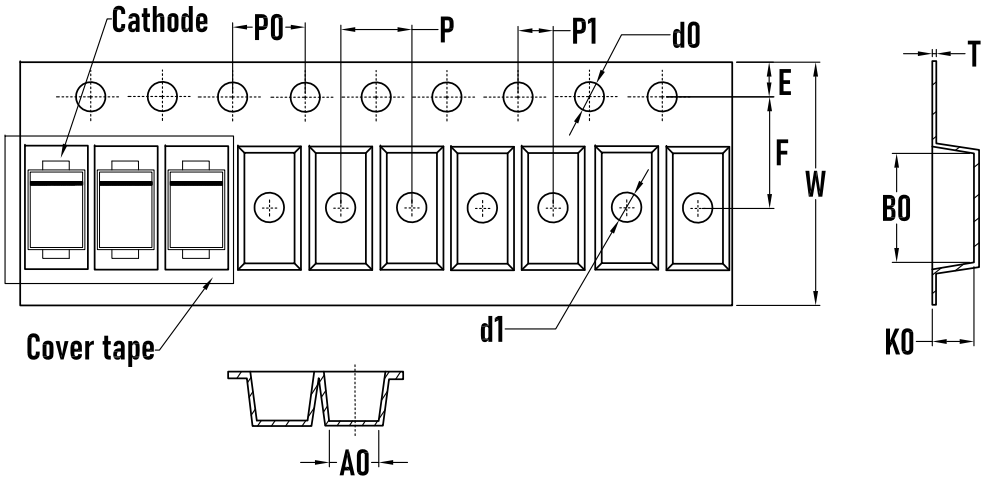
Fast Recovery Rectifier Diode

Outline Drawing - SMA



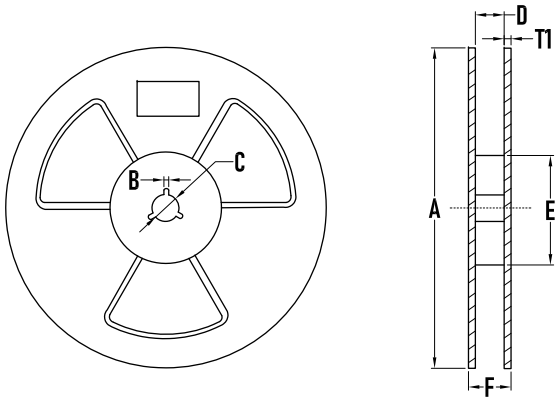
SYMBOL	MILLIMETER		Inches	
	MIN.	MAX.	MIN.	MAX.
D	2.5	2.9	0.098	0.114
D1	1.2	1.8	0.047	0.071
T	4.8	5.3	0.189	0.209
T1	0.8	1.5	0.031	0.059
d	–	0.2	–	0.008
H1	1.8	2.2	0.071	0.087
H	1.9	2.5	0.075	0.098
L	3.9	4.6	0.154	0.181

Packaging Tape - SMA



SYMBOL	MILLIMETER
A0	2.70
B0	5.10±0.1
d0	1.50±0.1
d1	1.50±0.1
E	1.75±0.1
F	5.50±0.1
K0	2.40±0.1
P	4.00±0.1
P0	4.00±0.1
P1	2.00±0.1
W	12.00±0.1
T	0.2±0.02

Packaging Reel



SYMBOL	MILLIMETER
A	323±2
B	3.0±0.2
C	15.0±0.5
D	13±2
E	73±2
T1	2.2±0.2
Quantity	5000PCS

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