

**SEMTECH**

RECTIFIER, up to 400V, 2.1A, 50ns

USC1104  
USC1105  
USC1106

January 7, 1998

TEL:805-498-2111 FAX:805-498-3804 WEB:http://www.semtech.com

AXIAL LEADED HERMETICALLY SEALED  
SUPERFAST RECTIFIER DIODE

QUICK  
REFERENCE DATA

- Very low reverse recovery time
- Hermetically sealed with Metoxilite fused metal oxide
- Low thermal impedance
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 200 - 400V$
- $I_F = 2.1A$
- $t_{rr} = 50ns$
- $I_R = 10\mu A$

ABSOLUTE MAXIMUM RATINGS (@ 25°C unless otherwise specified)

	Symbol	USC1104	USC1105	USC1106	Unit
Working reverse voltage	$V_{RWM}$	200	300	400	V
Repetitive reverse voltage	$V_{RRM}$	200	300	400	V
Average forward current (@ 55°C, lead length = 0.375")	$I_{F(AV)}$	←—————	2.1	—————→	A
Repetitive surge current (@ 55°C in free air, lead length 0.375")	$I_{FRM}$	←—————	9.0	—————→	A
Non-repetitive surge current ( $t_p = 8.3ms$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	←—————	20	—————→	A
Storage temperature range	$T_{STG}$	←—————	-55 to +150	—————→	°C
Operating temperature range	$T_{OP}$	←—————	-55 to +150	—————→	°C

MECHANICAL

DIM "	MM		INCHES		NOTE
	MIN	MAX	MIN	MAX	
A	1.6	2.8	.065	.110	-
B	25.4	33.0	1.00	1.30	-
C	3.5	4.2	.140	.165	-
D	-	.80	-	.030	1
E	.66	.84	.026	.033	-

NOTES:  
1. LEAD DIAMETER UNCONTROLLED OVER THIS REGION.

Weight = 0.013oz



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**ELECTRICAL CHARACTERISTICS** (@ 25°C unless otherwise specified)

	Symbol	USC1104	USC1105	USC1106	Unit
Average forward current max. (pcb mounted; T <sub>A</sub> = 55°C) for sine wave	I <sub>F(AV)</sub>	←	1.0	→	A
	I <sub>F(AV)</sub>	←	1.1	→	A
Average forward current max. (T <sub>L</sub> = 55°C; L = 3/8") for sine wave	I <sub>F(AV)</sub>	←	2.0	→	A
	I <sub>F(AV)</sub>	←	2.1	→	A
for square wave	I <sub>F(AV)</sub>	←	2.1	→	A
I <sup>2</sup> t for fusing (t = 8.3mS) max.	I <sup>2</sup> t	←	1.7	→	A <sup>2</sup> S
Forward voltage drop max. @ I <sub>F</sub> = 1.0A, T <sub>j</sub> = 25°C	V <sub>F</sub>	←	1.25	→	V
Reverse current max. @ V <sub>RWM</sub> , T <sub>j</sub> = 25°C	I <sub>R</sub>	←	10	→	μA
	I <sub>R</sub>	←	200	→	μA
@ V <sub>RWM</sub> , T <sub>j</sub> = 100°C	I <sub>R</sub>	←	200	→	μA
Reverse recovery time max. 0.5A I <sub>F</sub> to 1.0A I <sub>R</sub> . Recovers to 0.25A I <sub>RR</sub> .	t <sub>rr</sub>	←	50	→	nS
Junction capacitance typ. @ V <sub>R</sub> = 5V, f = 1MHz	C <sub>j</sub>	←	25	→	ρF

**THERMAL CHARACTERISTICS**

	Symbol	USC1104	USC1105	USC1106	Unit
Thermal resistance - junction to lead Lead length = 0.0"	R <sub>θJL</sub>	←	7	→	°C/W
	R <sub>θJL</sub>	←	38	→	°C/W
Lead length = 0.375"	R <sub>θJL</sub>	←	38	→	°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper.	R <sub>θJA</sub>	←	95	→	°C/W