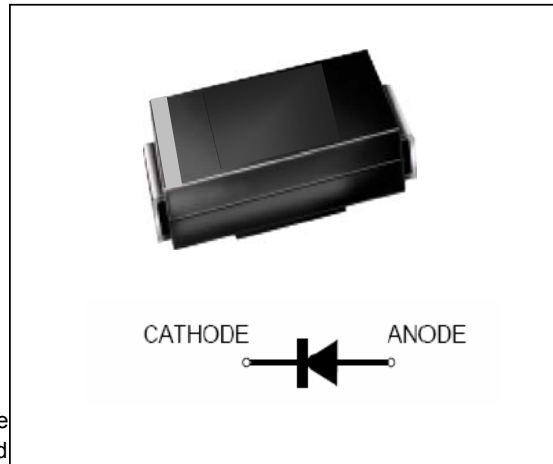


S-FM401 thru S-FM407

Surface Mount Glass Passivated Junction Rectifiers Reverse Voltage 50 to 1000V Forward Current 1.0A

FEATURES

- * Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- * High temperature metallurgically bonded construction
- * Cavity-free glass passivated junction
- * Capable of meeting environmental standards of MIL-S-19500
- * 1.0 A operation at TL=100°C with no thermal runaway
- * Typical IR less than 1.0μA
- * High temperature soldering guaranteed: 260°C/10 seconds
- * S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



Mechanical Data

Case: JEDEC DO-214AC, molded plastic over glass body

Terminals: Plated axial leads, solderable per MIL-STD-750, Method 2026

Polarity: Color band denotes cathode end

Mounting Position: Any

Weight: 0.0023 oz., 0.065 g

Handling precaution: None

We declare that the material of product compliance with ROHS requirements

Electrical Characteristic

1. Maximum & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	S-FM 401	S-FM 402	S-FM 403	S-FM 404	S-FM 405	S-FM 406	S-FM 407	Unit
Device marking code		S-M01	S-M02	S-M03	S-M04	S-M05	S-M06	S-M07	
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RSM voltage	V_{RSM}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current 0.375" (9.5mm) lead length at TL = 75°C(See fig. 1)	$I_{F(AV)}$	1.0							A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I_{FSM}	30							A
Typical thermal resistance (Note 1)	$R_{\theta JA}$	75							°C/W
Operating junction and storage temperature range	T_J, T_{STG}	-50 to +150							°C

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	S-FM 401	S-FM 402	S-FM 403	S-FM 404	S-FM 405	S-FM 406	S-FM 407	Unit
Maximum instantaneous forward voltage at 1.0A	V_F	1.1							V
Maximum DC reverse current $T_A = 25^\circ\text{C}$ at rated DC blocking voltage $T_A = 125^\circ\text{C}$	I_R	5.0							μA
Typical junction capacitance at 4.0V, 1MHz	C_J	8.0							PF

NOTES:

1. $I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A$
2. 8.0mm² (.013mm thick) land areas

S-FM401 thru S-FM407

2. Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

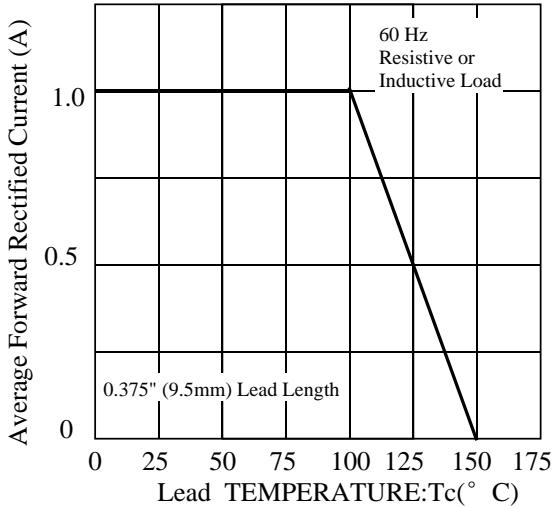


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

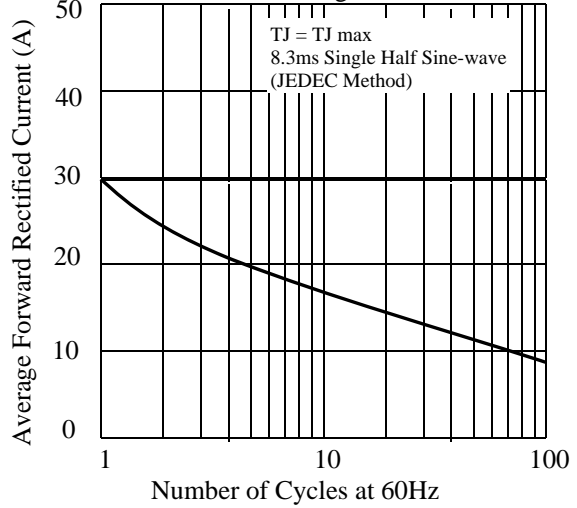


Fig 3. - Typical Instantaneous Forward Characteristics

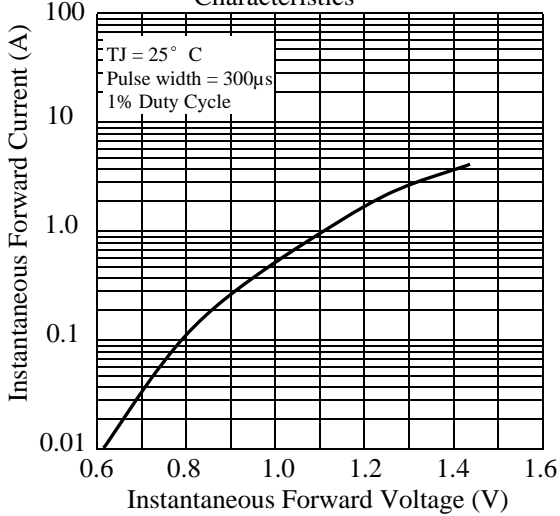


Fig 4. - Typical Reverse Characteristics

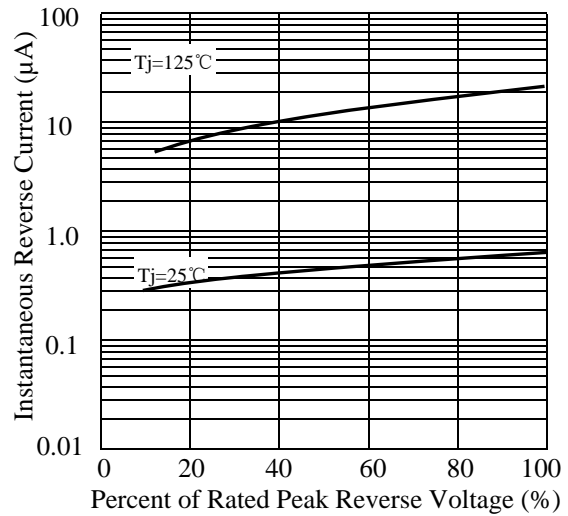


Fig 5. - typical transient thermal impedance

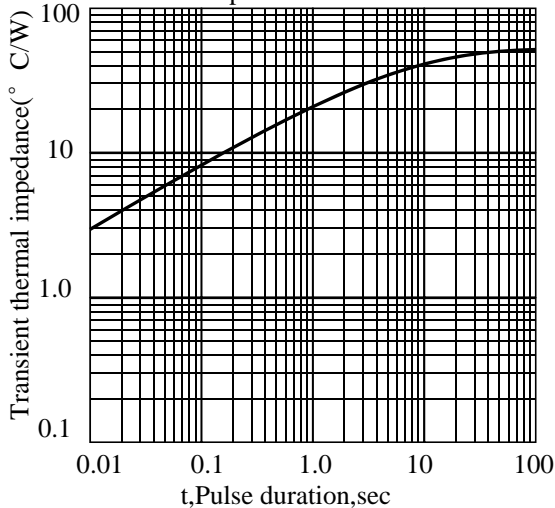
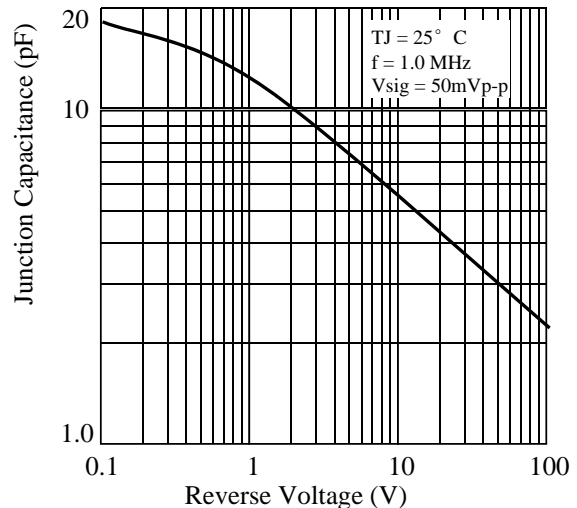
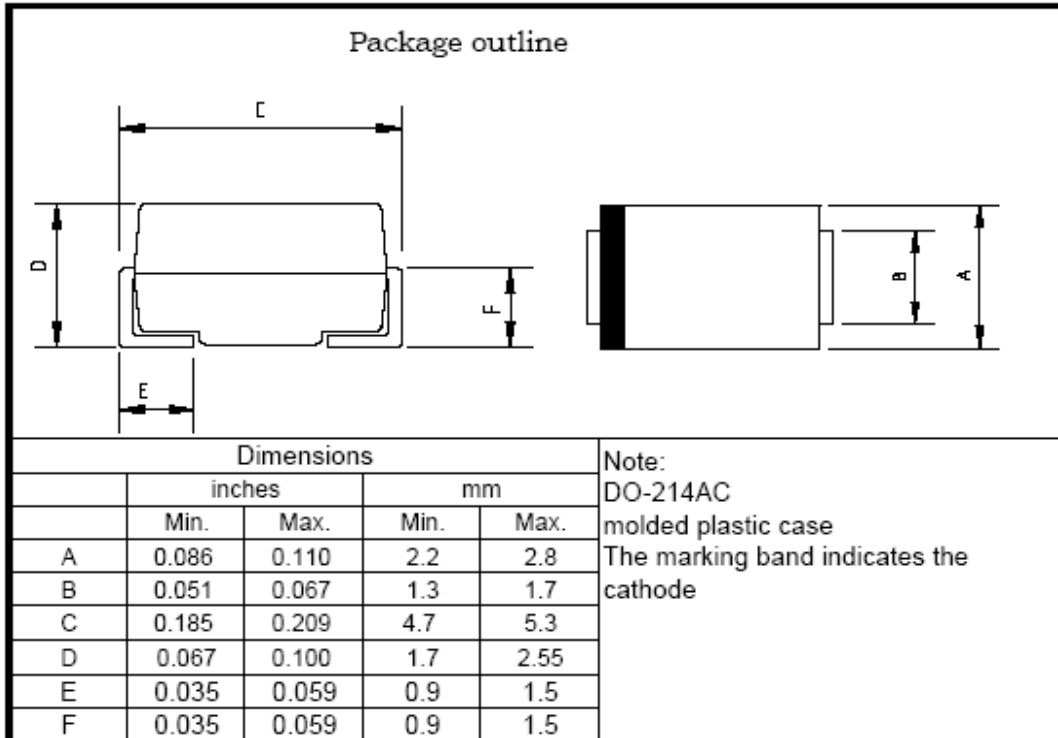


Fig 6. - Typical Junction Capacitance

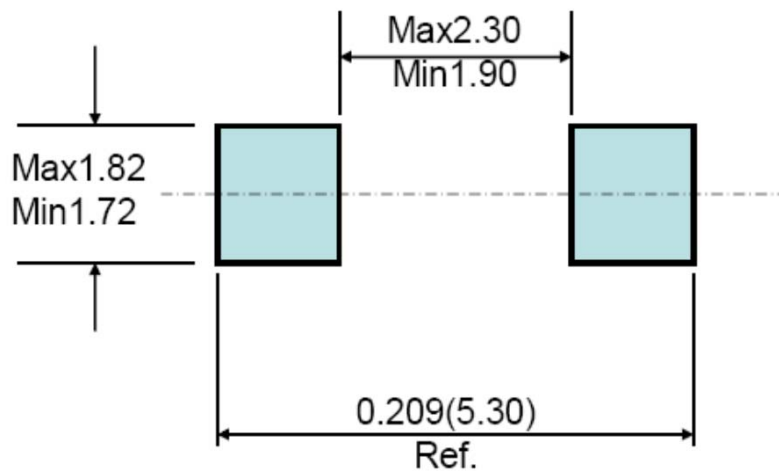


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3. dimension:



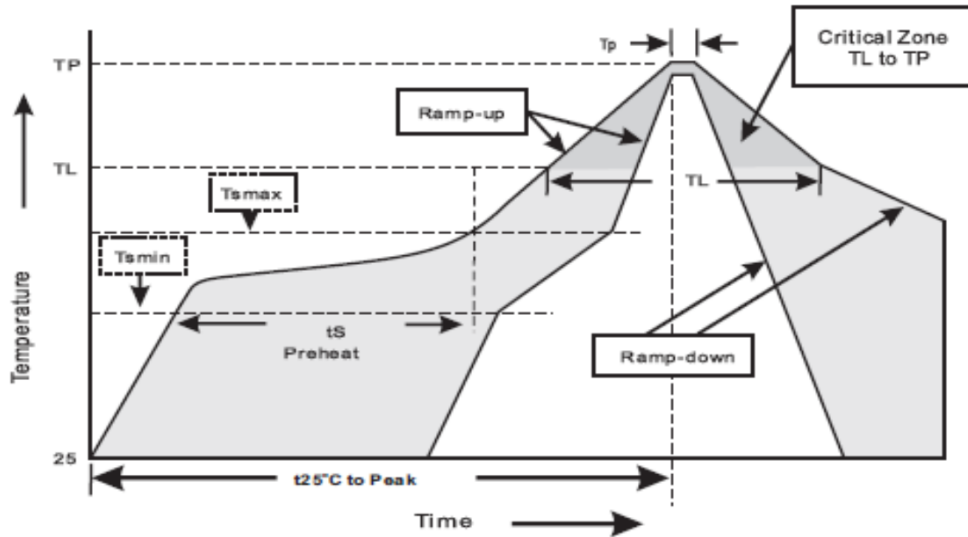
Mounting Pad Layout ---SMA



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4. Suggested thermal profile for soldering process

1. Storage environment : Temperature=5~40°C Humidity=55±25%
2. Reflow soldering of surface-mount device



3. Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat	
- Temperature Min(T _{smin})	150°C
- Temperature Max(T _{smax})	200°C
- Time(min to max)(t _s)	60~120sec
T _{smax} to T _L	
- Ramp-up Rate	<3sec
Time maintained above:	
- Temperature (T _L)	217°C
- Time(t _L)	60-260sec
Peak Temperature(T _P)	255 -0/+5°C
Time within 5°C of actual Peak Temperature(T _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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5.High reliability test capabilities

TEST ITEMS	CONDITION	DURATION	SAMPLE SIZE	DECISION	
				ACC	REJ
Steady-State Operation Life (SSOL)	IF=100%rateIF VR=100%rateVR Ta=25℃	1000h	77PCS	0	1
Intermittent Operation Life (IOL)	$\Delta T_j \geq 100^\circ\text{C}$ Ton=Toff=2min	1000h	77PCS	0	1
High Temperature Reverse Bias (HTRB)	VR=80%rateVR Tj=150℃	1000h	77PCS	0	1
High Humidity High Temperature Reverse Bias (H3TRB)	VR=80%rateVR(VRmax \leq 100V) Ta=85℃ RH=95%	1000h	77PCS	0	1
High Temperature Storage Life (HTSL)	Ta=150℃	1000h	77PCS	0	1
Temperature Cycling (TC)	AIR TO AIR -55℃ / 15MIN 150℃ / 15MIN 25℃ / 20SEC For Transfer	1000 Cycles	77PCS	0	1
Autoclave (AC)	Ta=121℃ 100%RH P=15PSIG	96h	77PCS	0	1
Forward Surge (F.S)	Ta=55℃ IFSM=100%RateIFSM 10ms HALF-SINE	1time	15PCS	0	1
Resistance To Solder Heat (RSH)	280℃ \pm 5℃ Reflow Soldering	10 SECS	30PCS	0	1
Solderability (SD)	245℃ \pm 5℃	5 SECS	10PCS	0	1

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6. Update Record

版次	更新记录	更新作者	更新日期
1	第一版	周杰	2013.11.01
2	更新Fig1 的降额条件, TC=75℃改为TL=100℃。	周杰	2014.07.22