3A, 50V - 1000V Fast Recovery Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Fast switching for high efficiency
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Lighting application
- Snubber
- General purpose

MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.210g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	3	A
V_{RRM}	50 - 1000	V
I_{FSM}	100	A
$T_{J\ MAX}$	175	°C
Package	DO-214AB (SMC)	
Configuration	Single die	

DO-214AB (SMC)

Cathode ◄ Anode

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER	SYMBOL	RS3A	RS3B	RS3D	RS3G	RS3J	RS3K	RS3M	UNIT
Marking code on the device		RS3A	RS3B	RS3D	RS3G	RS3J	RS3K	RS3M	
Repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	140	280	420	560	700	V
Forward current	I_F	3							A
Peak forward surge current, 8.3ms single half sine wave superimposed on rated load	I_{FSM}	100							A
Junction temperature	T_J	- 55 to +175							°C
Storage temperature	T_{STG}	- 55 to +175							°C

Version: M2304

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\Theta JL}$	15	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	50	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage[1]		I_F = 3A, T_J = 25°C	V_F	-	1.3	V
Reverse current @ rated V_R[2]		T_J = 25°C	I_R	-	10	µA
		T_J = 125°C		-	250	µA
Reverse recovery time	RS3A RS3B RS3D RS3G	I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A	t_{rr}	-	150	ns
	RS3J			-	250	ns
	RS3K RS3M			-	500	ns

Notes:
1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

ORDERING INFORMATION

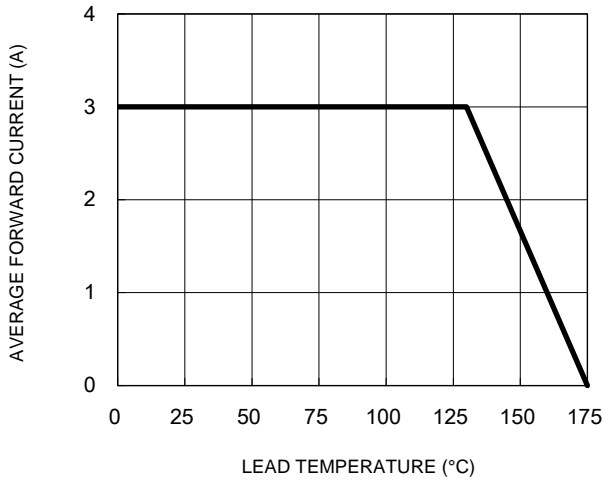| ORDERING CODE[1]	PACKAGE	PACKING
RS3x	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:
1. "x" defines voltage from 50V(RS3A) to 1000V(RS3M)

Version: M2304

CHARACTERISTICS CURVES
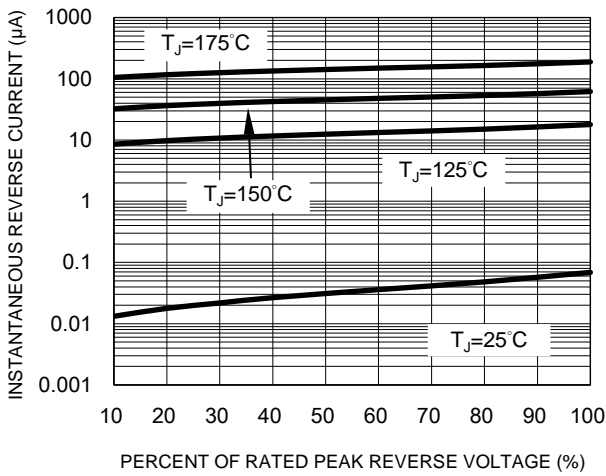
(T_A = 25°C unless otherwise noted)
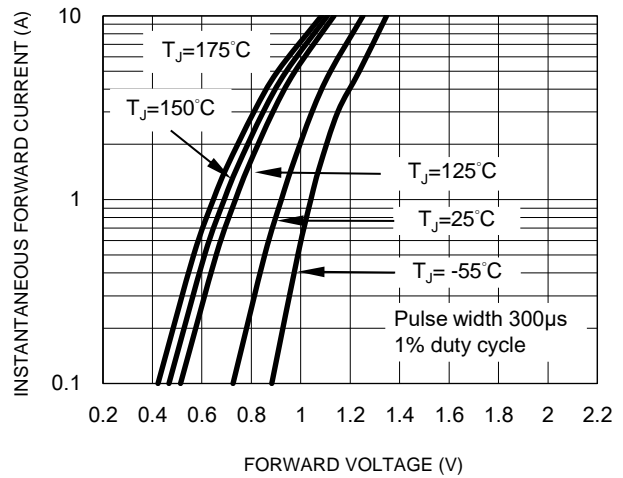
Fig.1 Forward Current Derating Curve

AVERAGE FORWARD CURRENT (A)

LEAD TEMPERATURE (°C)

Fig.2 Typical Junction Capacitance

CAPACITANCE (pF)

f=1.0MHz
Vsig=50mVp-p

REVERSE VOLTAGE (V)
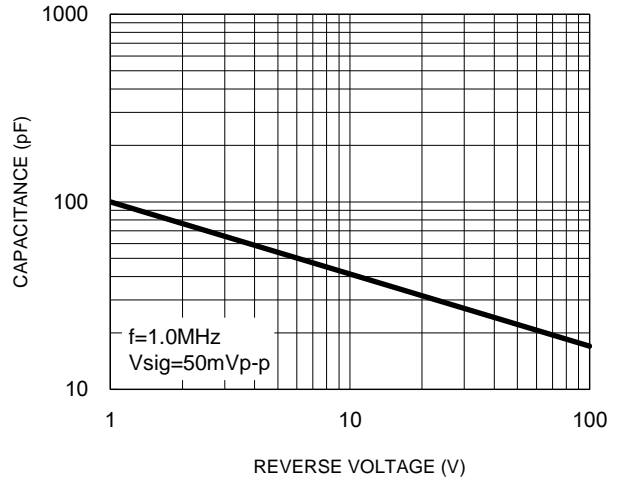
Fig.3 Typical Reverse Characteristics

INSTANTANEOUS REVERSE CURRENT (μA)

T_J=175°C

T_J=150°C

T_J=125°C

T_J=25°C

PERCENT OF RATED PEAK REVERSE VOLTAGE (%)

Fig.4 Typical Forward Characteristics

INSTANTANEOUS FORWARD CURRENT (A)

T_J=175°C

T_J=150°C

T_J=125°C

T_J=25°C

T_J= -55°C

Pulse width 300μs
1% duty cycle

FORWARD VOLTAGE (V)

Fig.5 Maximum Non-Repetitive Forward Surge Current

PEAK FORWARD SURGE CURRENT (A)

8.3ms single half sine wave

NUMBER OF CYCLES AT 60 Hz

3
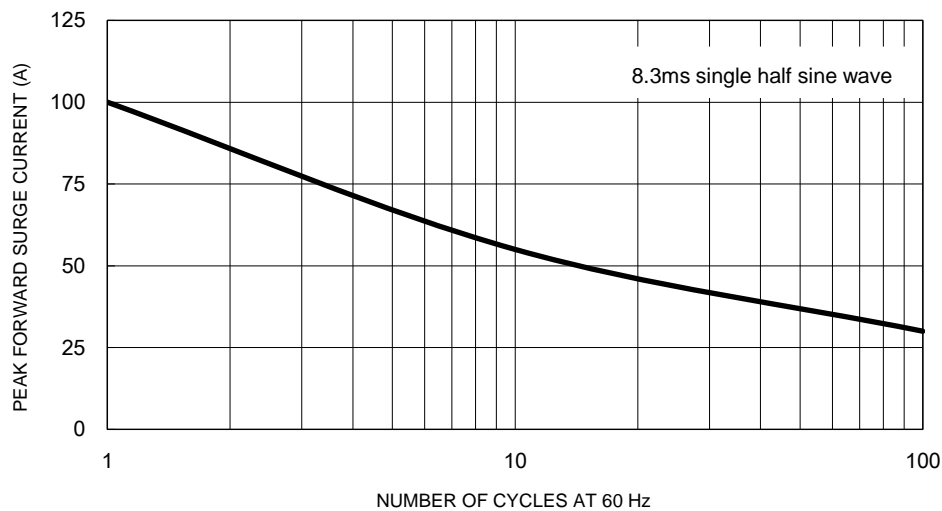
CHARACTERISTICS CURVES
(T_A = 25°C unless otherwise noted)

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram

50Ω NONINDUCTIVE   10Ω NONINDUCTIVE

DUT

(+) 50Vdc (approx) (-)

1Ω NON INDUCTIVE

OSCILLOSCOPE (NOTE 1)

PULSE GENERATOR (NOTE 2)

(-)   (+)

NOTES: 1. Rise Time=7ns max. Input Impedance= 1 megohm 22pf
2. Rise Time=10ns max. Sourse Impedance= 50 ohms

+0.5A   0   -0.25A   -1.0A   trr

Version: M2304

PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)

⊕ 0.13 Ⓜ C A B

△4 7.15
△5 6.60

8.15
7.75

B

A

6.25
5.55

△4 △5

C

H

3.20
2.90

⊕ 0.13 Ⓜ C A B

H

2.65
1.95

2.45
1.90

0.31
0.15

0.20
0.05

1.60
0.75

SEATING
PLANE

C

DETAIL A, ROTATED -90°
(SCALE 3:1)

6.80

2.00

3.60

SUGGESTED PAD LAYOUT

CATHODE
INDICATOR

P/N
GYWF
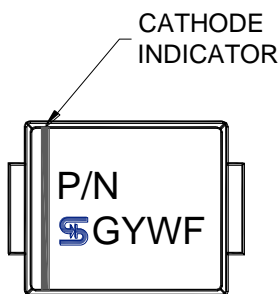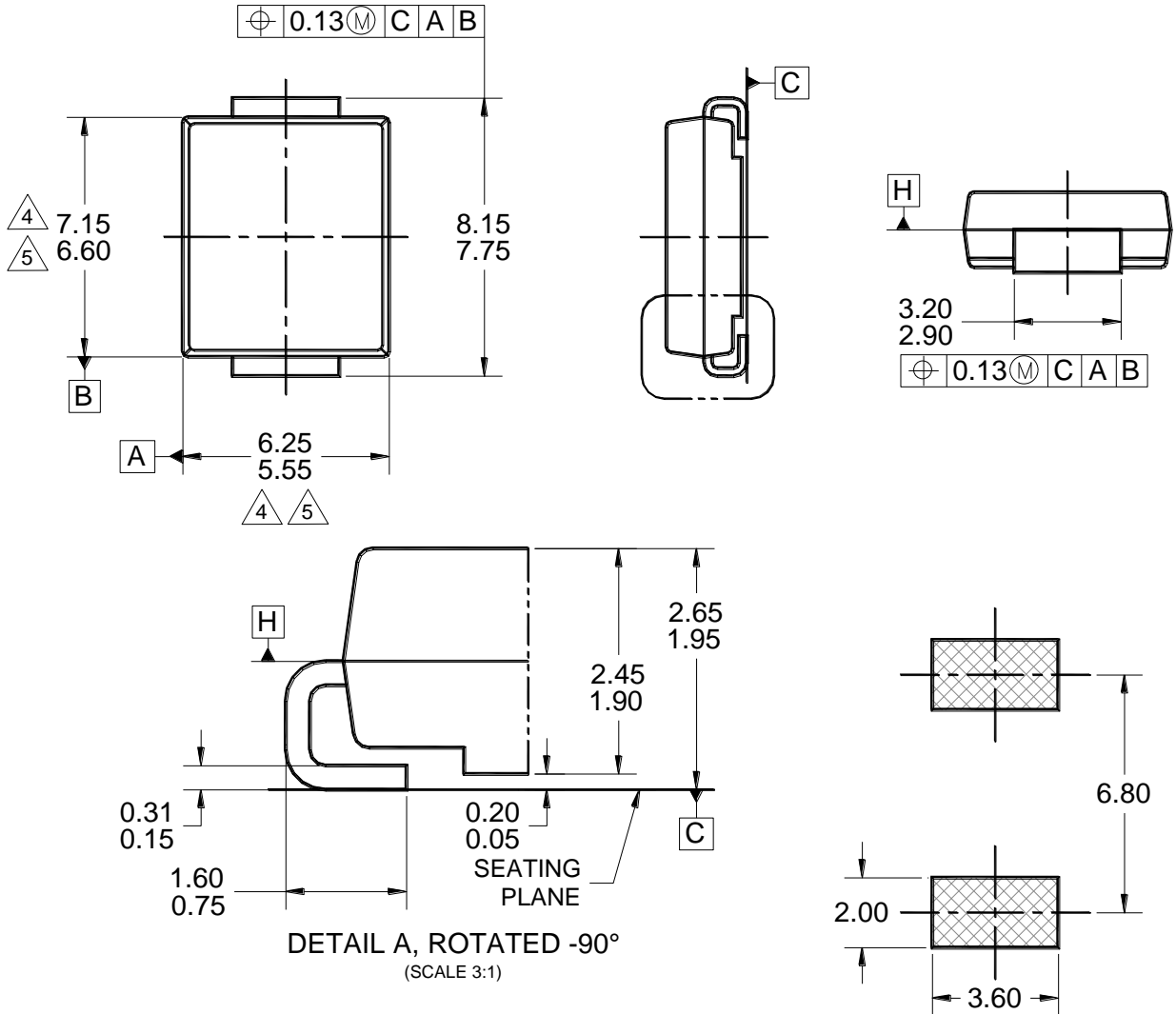
MARKING DIAGRAM

P/N = MARKING CODE
G = GREEN COMPOUND
YW = DATE CODE
F = FACTORY CODE

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.

2. DIMENSIONING AND TOLERANCING PER
   ASME Y14.5M-1994.

3. PACKAGE OUTLINE REFERENCE:
   JEDEC DO-214, VARIATION AB, ISSUE D.

△4 MOLDED PLASTIC BODY DIMENSIONS DO NOT
   INCLUDE MOLD FLASH.

△5 MOLDED PLASTIC BODY LATERAL DIMENSIONS
   TO BE DETERMINED AT DATUM PLANE H.

6. DWG NO. REF: HQ2SD07-DO214SMC-036 REV A.

Version: M2304

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