

5A, 200V - 600V Super Fast Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

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 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.250g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	5	A
V_{RRM}	200 - 600	V
I_{FSM}	164	A
$T_J \text{ MAX}$	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	



DO-214AB (SMC)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES5D-T	ES5G-T	ES5J-T	UNIT
Marking code on the device		ES5D	ES5G	ES5J	
Repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	V
Forward current	I_F	5			A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	I_{FSM} 164			A
	$t = 1.0\text{ms}$	364			A
Junction temperature	T_J	-55 to +150			°C
Storage temperature	T_{STG}	-55 to +150			°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	25	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	54	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	18	°C/W

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	ES5D-T	I _F = 2.5A, T _J = 25°C	V _F	0.82	-	V
		I _F = 5.0A, T _J = 25°C		0.89	0.95	V
		I _F = 2.5A, T _J = 125°C		0.67	-	V
		I _F = 5.0A, T _J = 125°C		0.76	0.85	V
	ES5G-T	I _F = 2.5A, T _J = 25°C		0.95	-	V
		I _F = 5.0A, T _J = 25°C		1.08	1.30	V
		I _F = 2.5A, T _J = 125°C		0.77	-	V
		I _F = 5.0A, T _J = 125°C		0.92	1.10	V
	ES5J-T	I _F = 2.5A, T _J = 25°C		1.10	-	V
		I _F = 5.0A, T _J = 25°C		1.36	1.70	V
		I _F = 2.5A, T _J = 125°C		0.83	-	V
		I _F = 5.0A, T _J = 125°C		0.96	1.20	V
Reverse current @ rated V _R ⁽²⁾		T _J = 25°C	I _R	-	10	μA
		T _J = 125°C		-	200	μA
Reverse recovery time		I _F = 0.5A, I _R = 1.0A, I _{rr} = 0.25A	t _{rr}	-	35	ns
Junction capacitance	ES5D-T	1MHz, V _R = 4.0V	C _J	185	-	pF
	ES5G-T			123	-	pF
	ES5J-T			71	-	pF

Notes:

- Pulse test with $PW = 0.3\text{ms}$
- Pulse test with $PW = 30\text{ms}$

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
ES5x-T	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:

- "x" defines voltage from 200V(ES5D-T) to 600V(ES5J-T)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

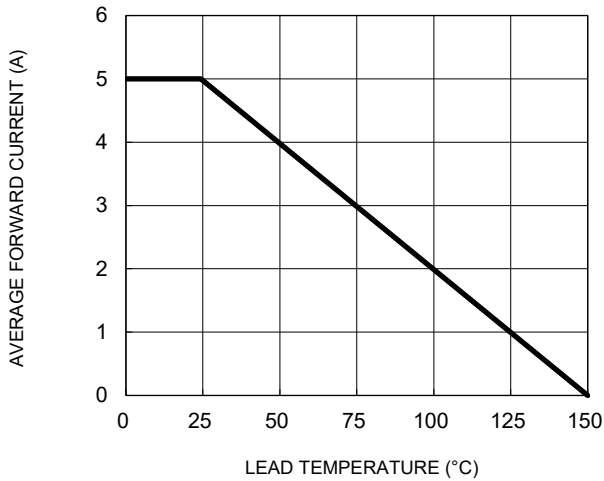


Fig.2 Typical Junction Capacitance

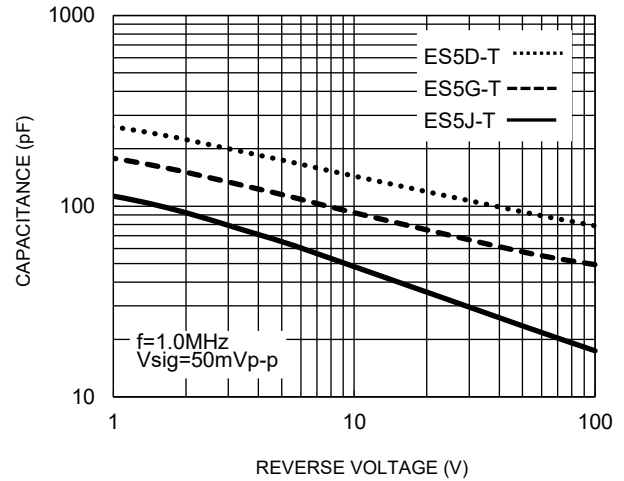


Fig.3 Typical Reverse Characteristics

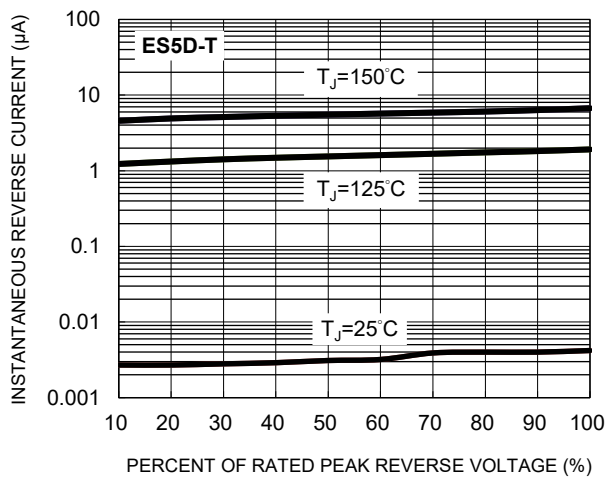


Fig.4 Typical Forward Characteristics

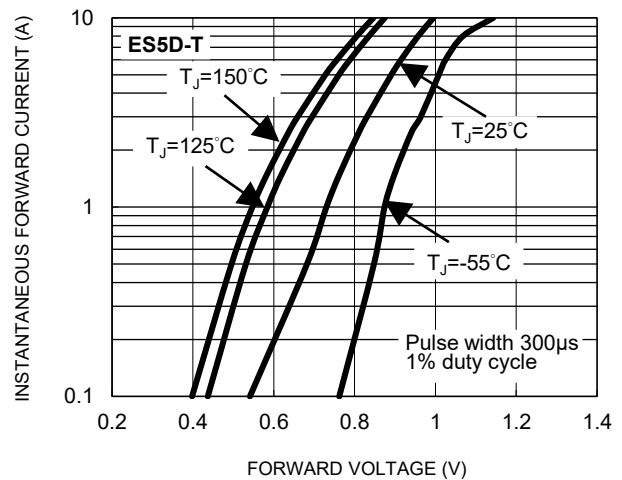


Fig.5 Typical Reverse Characteristics

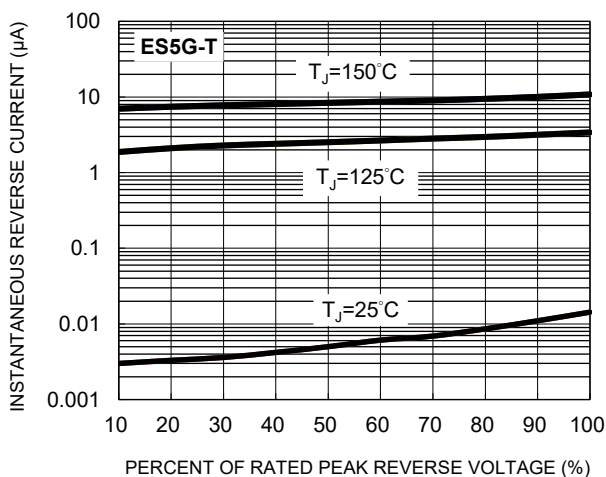
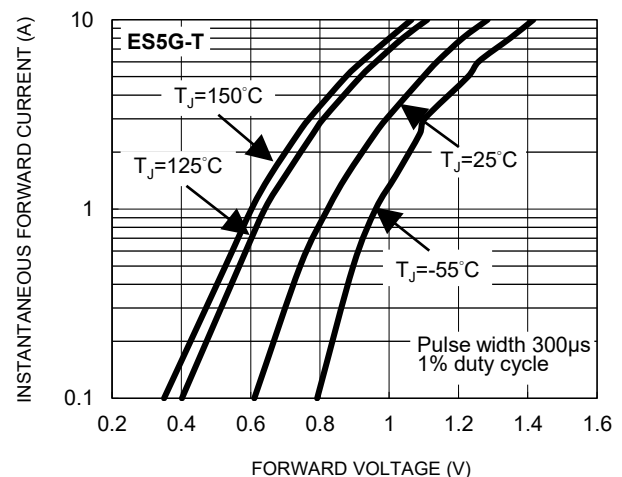


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 Typical Reverse Characteristics

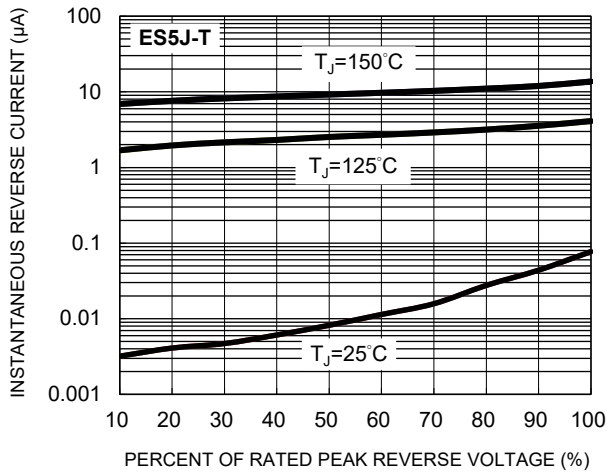


Fig.8 Typical Forward Characteristics

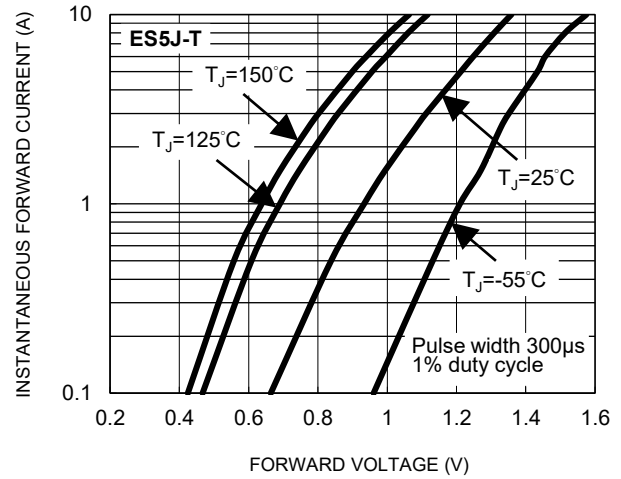
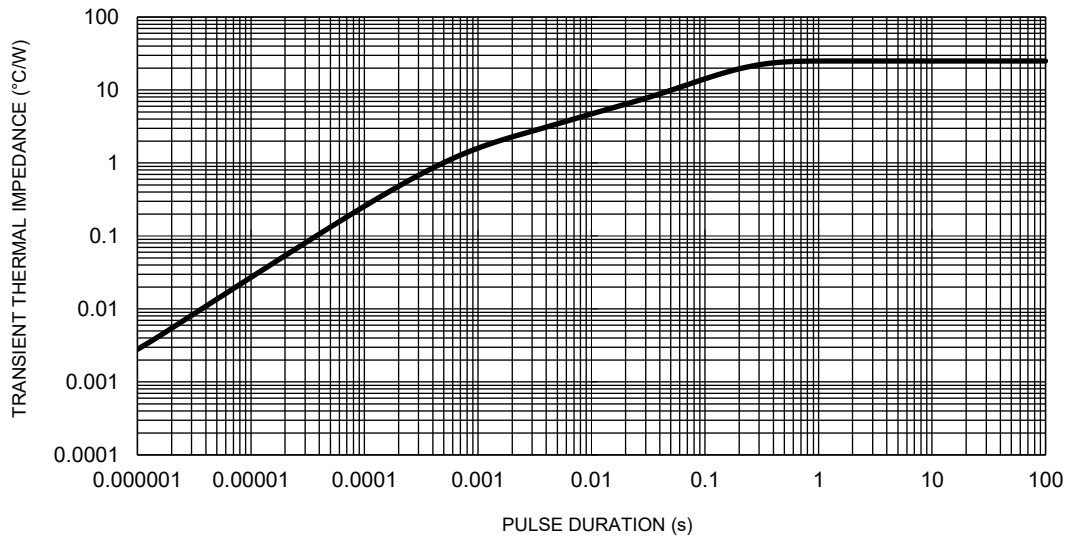
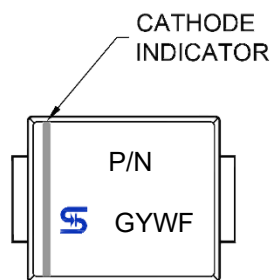
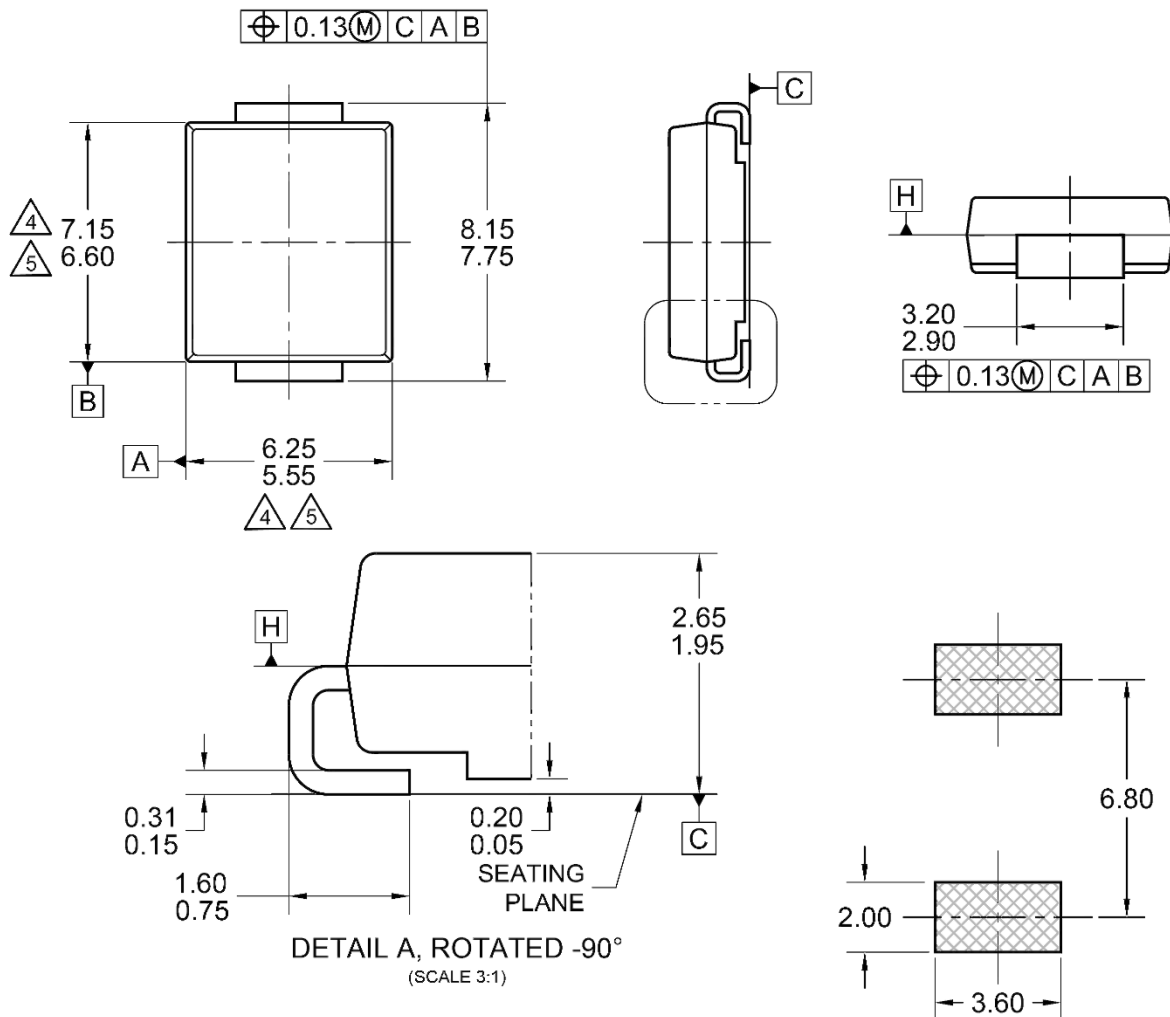


Fig.9 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



MARKING DIAGRAM

P/N = DEVICE MARKING
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.

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