

## 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 according to IEC 61249-2-21

### 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
$T_{JMAX}$	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	$t = 8.3\text{ms}$	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

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	25	$^{\circ}C/W$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	54	$^{\circ}C/W$
Junction-to-case thermal resistance	$R_{\theta JC}$	18	$^{\circ}C/W$

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

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage <sup>(1)</sup>	ES5D-T	$I_F = 2.5A, T_J = 25^{\circ}C$	$V_F$	0.82	-	V
		$I_F = 5.0A, T_J = 25^{\circ}C$		0.89	0.95	V
		$I_F = 2.5A, T_J = 125^{\circ}C$		0.67	-	V
		$I_F = 5.0A, T_J = 125^{\circ}C$		0.76	0.85	V
	ES5G-T	$I_F = 2.5A, T_J = 25^{\circ}C$		0.95	-	V
		$I_F = 5.0A, T_J = 25^{\circ}C$		1.08	1.30	V
		$I_F = 2.5A, T_J = 125^{\circ}C$		0.77	-	V
		$I_F = 5.0A, T_J = 125^{\circ}C$		0.92	1.10	V
	ES5J-T	$I_F = 2.5A, T_J = 25^{\circ}C$		1.10	-	V
		$I_F = 5.0A, T_J = 25^{\circ}C$		1.36	1.70	V
		$I_F = 2.5A, T_J = 125^{\circ}C$		0.83	-	V
		$I_F = 5.0A, T_J = 125^{\circ}C$		0.96	1.20	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^{\circ}C$	$I_R$	-	10	$\mu A$
		$T_J = 125^{\circ}C$		-	200	$\mu A$
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:**

1. Pulse test with  $PW = 0.3ms$
2. Pulse test with  $PW = 30ms$

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

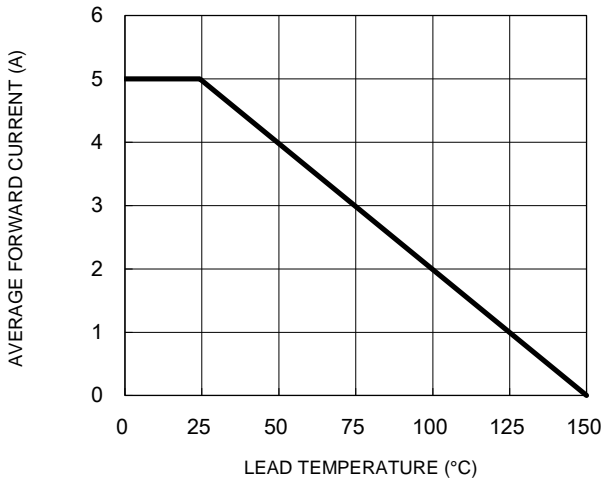
**Notes:**

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

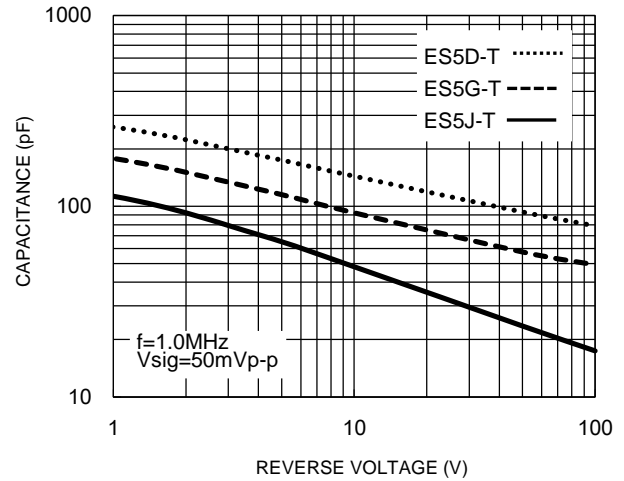
**CHARACTERISTICS CURVES**

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

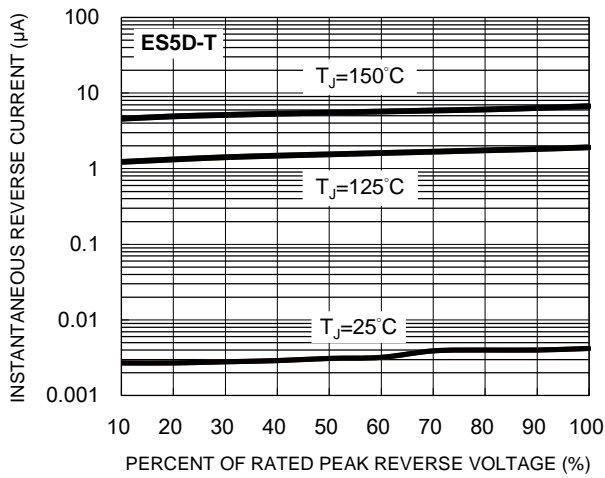
**Fig.1 Forward Current Derating Curve**



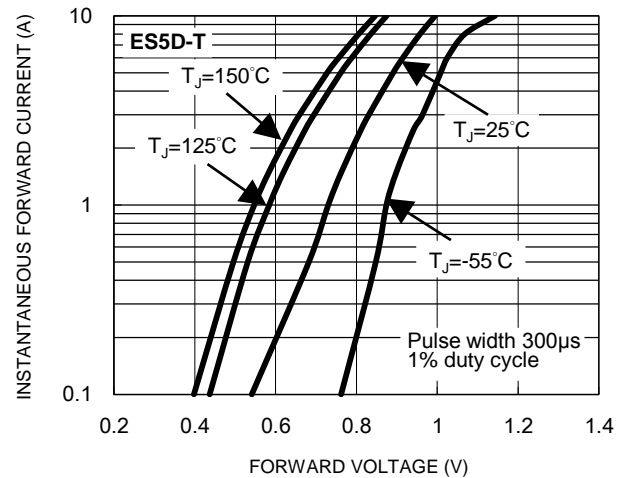
**Fig.2 Typical Junction Capacitance**



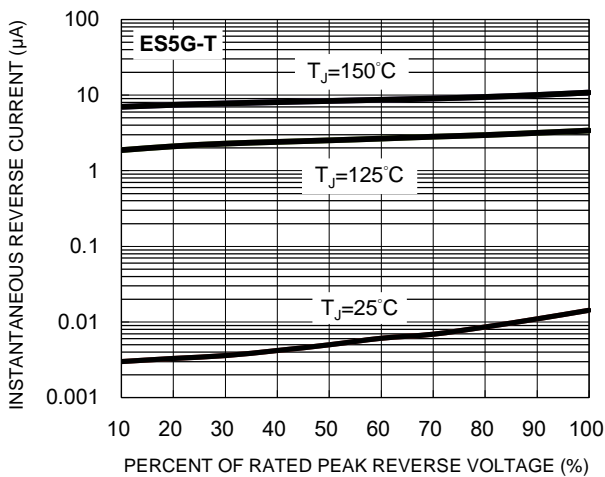
**Fig.3 Typical Reverse Characteristics**



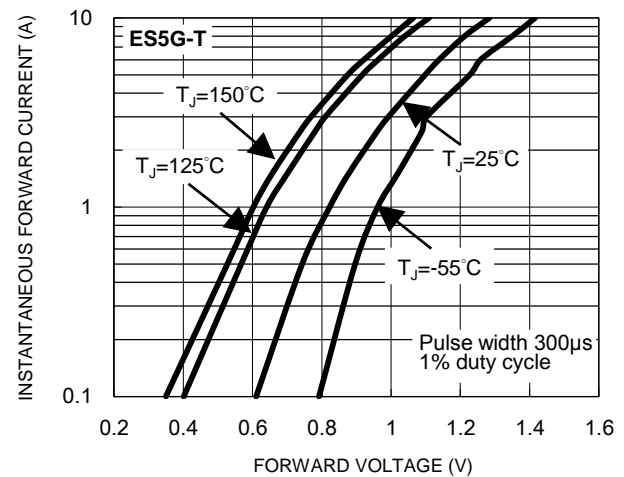
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



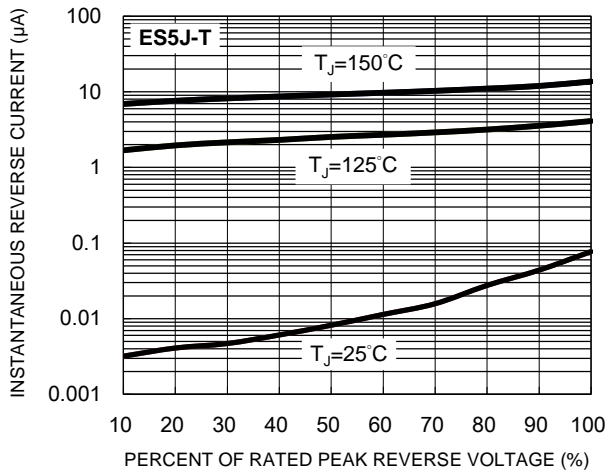
**Fig.6 Typical Forward Characteristics**



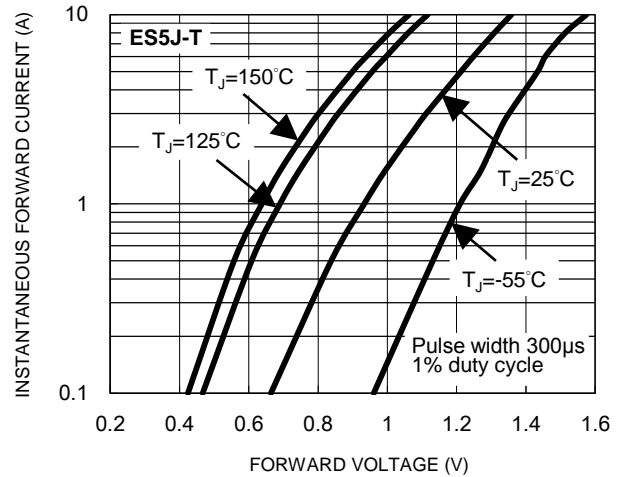
**CHARACTERISTICS CURVES**

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

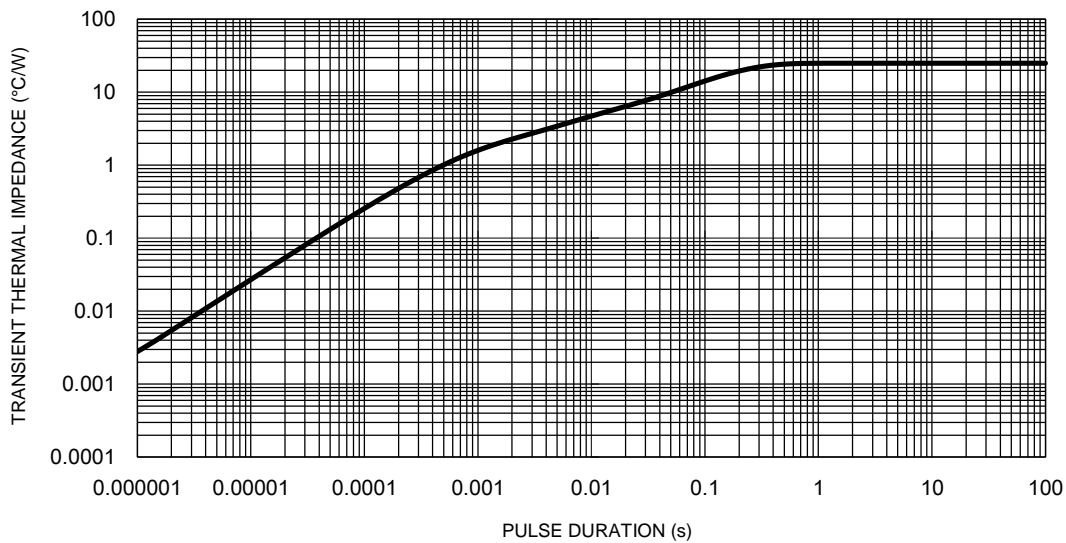
**Fig.7 Typical Reverse Characteristics**



**Fig.8 Typical Forward Characteristics**

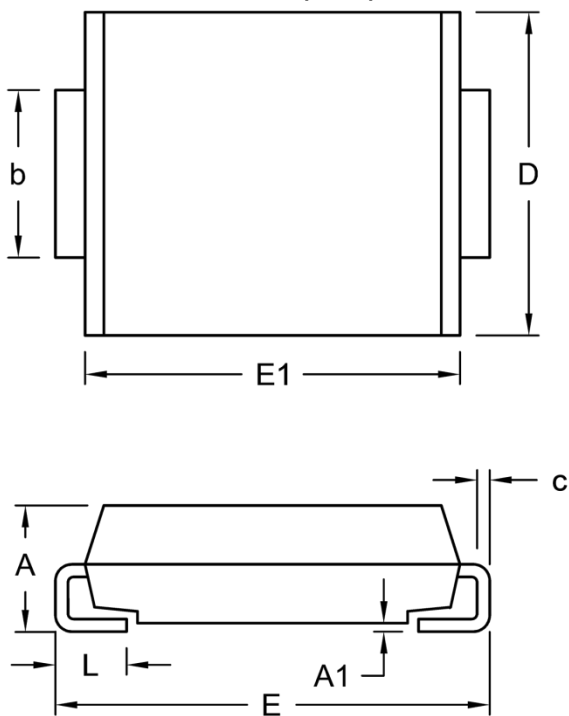


**Fig.9 Typical Transient Thermal Impedance**



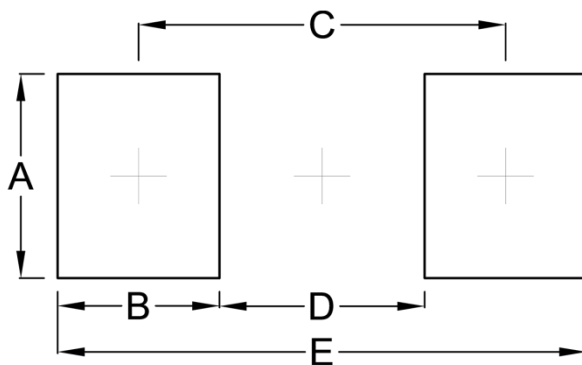
**PACKAGE OUTLINE DIMENSIONS**

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.61	0.078	0.103
A1	0.10	0.20	0.004	0.008
b	2.85	3.27	0.112	0.129
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	0.76	1.52	0.030	0.060

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	3.82	0.150
B	3.03	0.119
C	6.87	0.270
D	3.84	0.151
E	9.90	0.390

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

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