Schottky Barrier Rectifier

Reverse Voltage 200V Forward Current 1.0A

ES1DAF

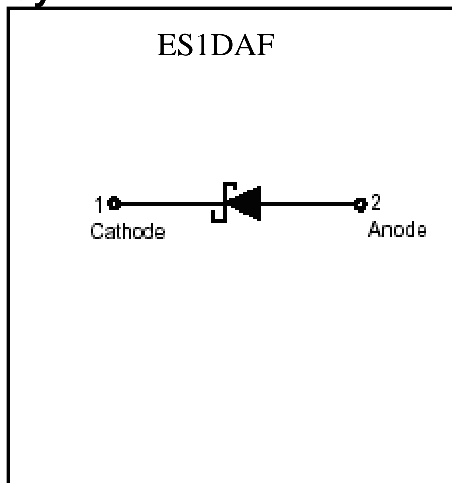
Features

- For surface mounted application
- Low profile package
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- High surge capability
- Guardring for overvoltage protection
- Ultra high-speed switching
- Silicon epitaxial planar chip, metal silicon junction
- High temperature soldering: 250°C/10 seconds at terminals
- Plastic material used carries UL flammability classification 94V-0

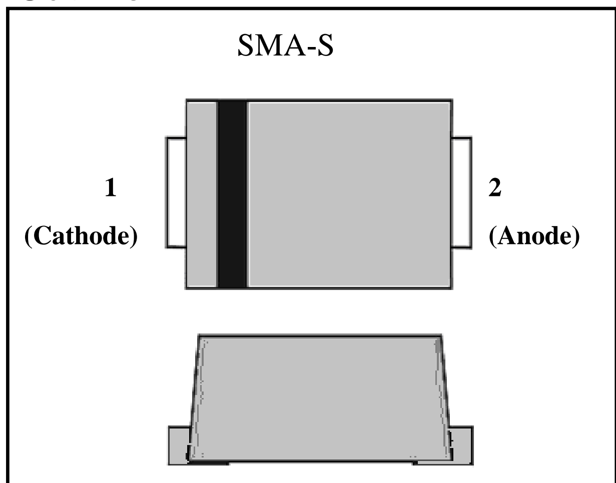
Mechanical Data

- Case: SMA-S molded plastic
- Terminals: Pure tin plated, solderable per MIL-STD-750 method 2026
- Polarity: Indicated by cathode band
- Weight: 0.04 gram

Symbol

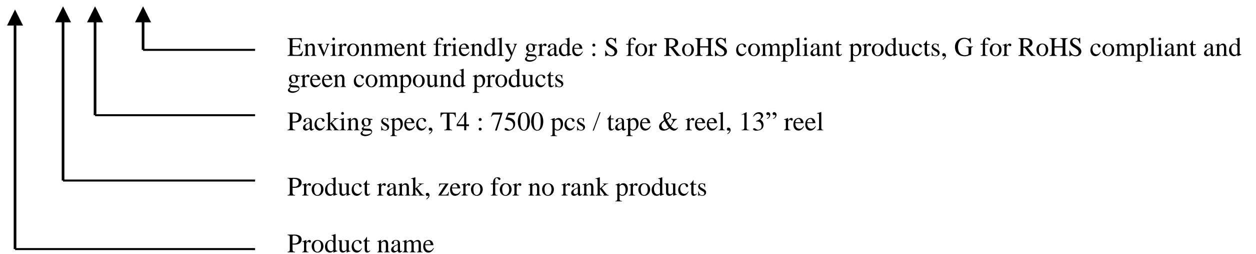


Outline



Ordering Information

Device	Package	Shipping	Marking
ES1DAF-0-T4-G	SMA-S (Pb-free lead plating and halogen-free package)	7500 pcs / Tape & Reel	ES1D



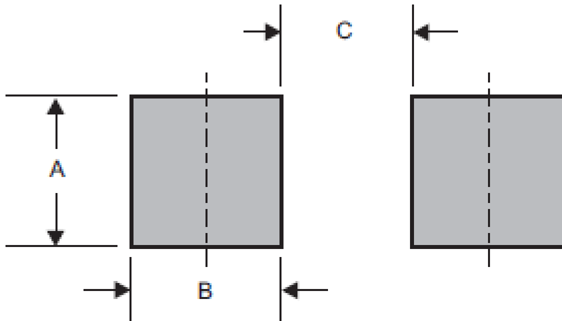
Maximum Ratings and Electrical Characteristics

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

Parameter		Symbol	Value	Units
Maximum repetitive peak reverse voltage		V_{RRM}	200	V
Maximum RMS voltage		V_{RMS}	140	V
Maximum DC blocking voltage		V_R	200	V
Maximum instantaneous forward voltage, I_F=1A		V_F	1	V
Maximum average forward rectified current, see Fig. 1		$I_{F(AV)}$	1	A
Non-repetitive peak forward surge current @8.3ms single half sine wave superimposed on rated load (JEDEC method)		I_{FSM}	30	A
Maximum DC reverse current at V_R T_J=25℃ T_J=100℃		I_R	5 100	μA
Maximum reverse recovery time (Note 1)		trr	35	ns
Typical junction capacitance @ f=1MHz and applied 4V reverse voltage		C_J	15	pF
Typical thermal resistance (Note 2)		$R_{\theta JA}$ $R_{\theta JC}$	72 36	°C/W
Power dissipation	T_A=25°C(Note 2)	P_D	1.7	W
	T_C=25°C		3.4	
Storage temperature range		T_{STG}	-65 ~ +175	℃
Operating junction temperature range		T_J	-55 ~ +150	℃

Note: 1.Reverse recovery test conditions : I_F=0.5A, I_R=1A, I_{RR}=0.25A
2.Mounted on FR-4 PCB copper with minimum recommended pad layout

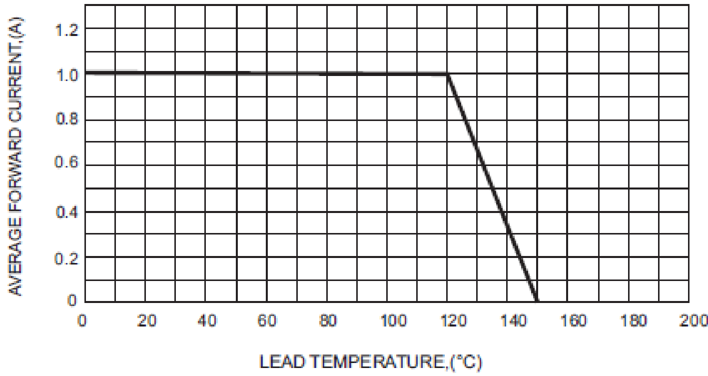
Recommended soldering footprint

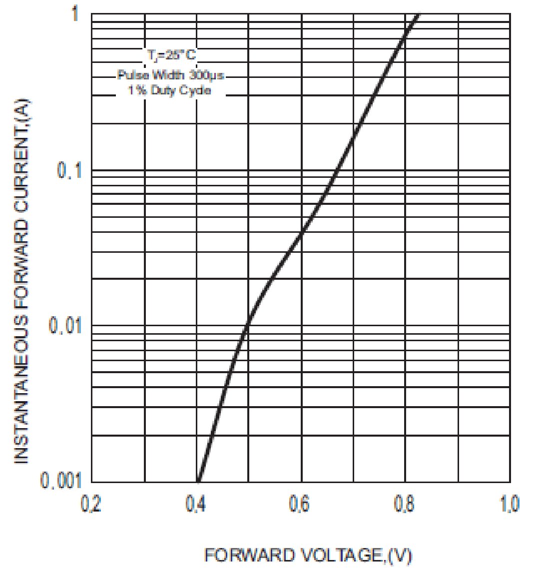


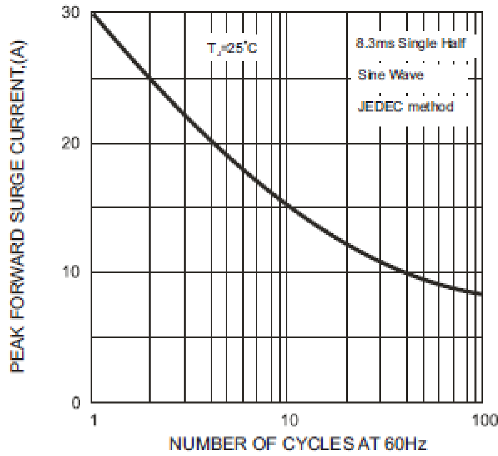
Dimensions in inches and (millimeters)

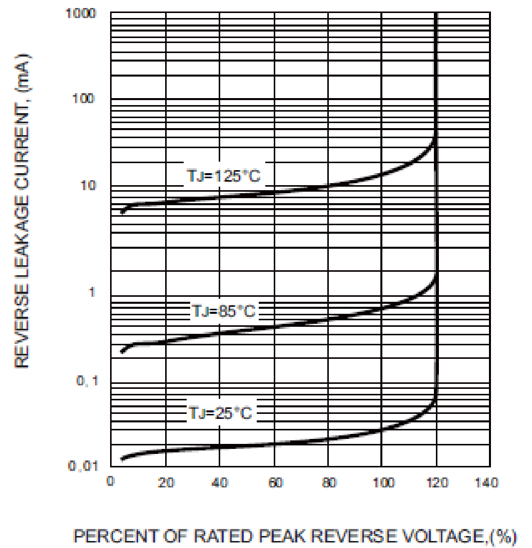
A	B	C
0.063 (1.60)	0.059 (1.50)	0.110 (2.80)

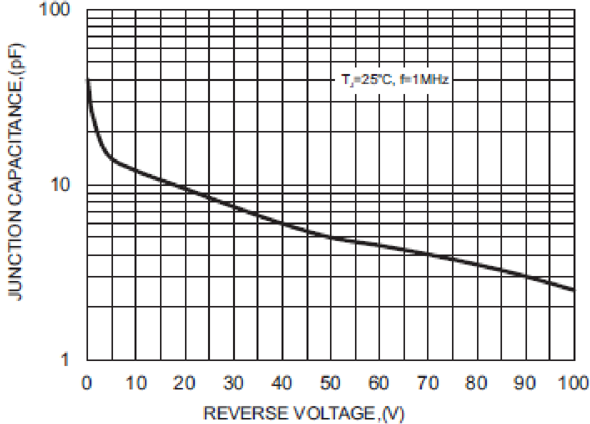
Typical Characteristics



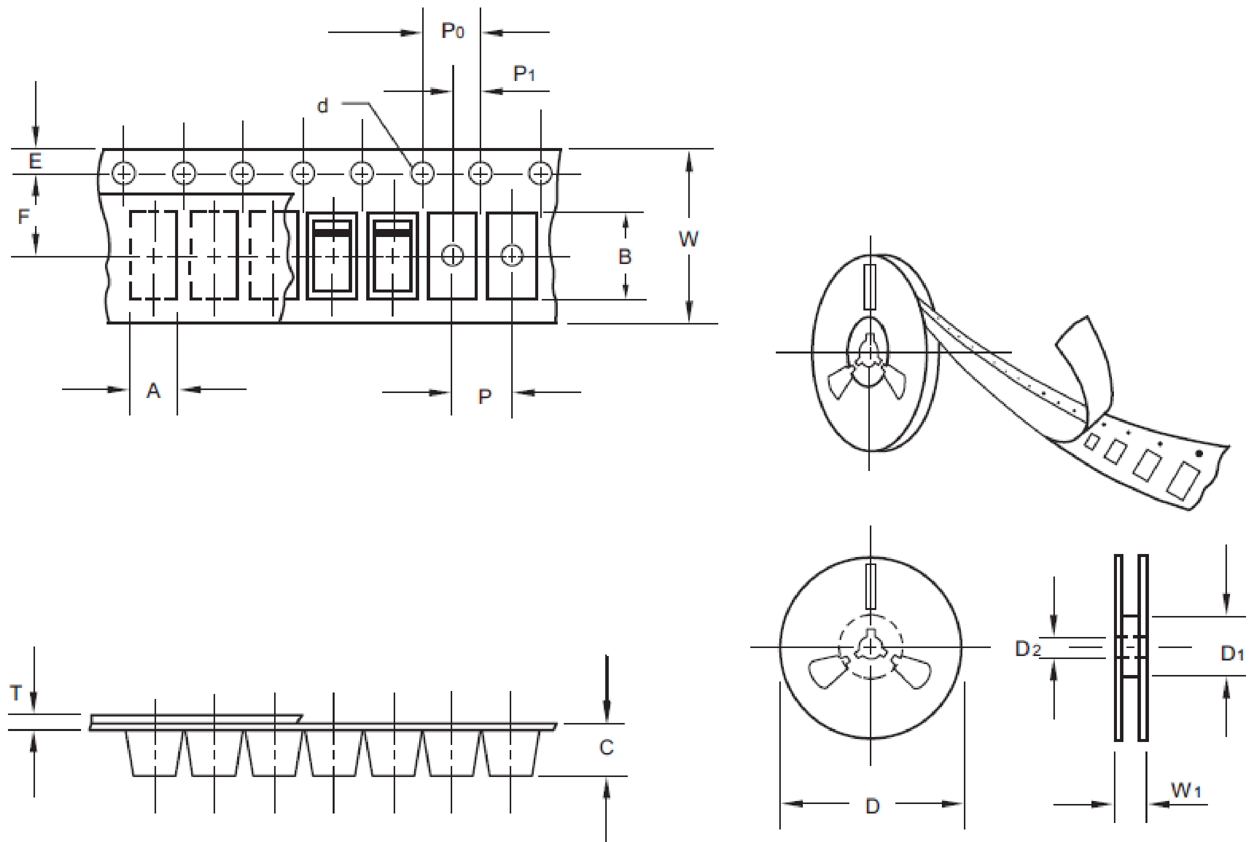








Packing Information



unit:mm

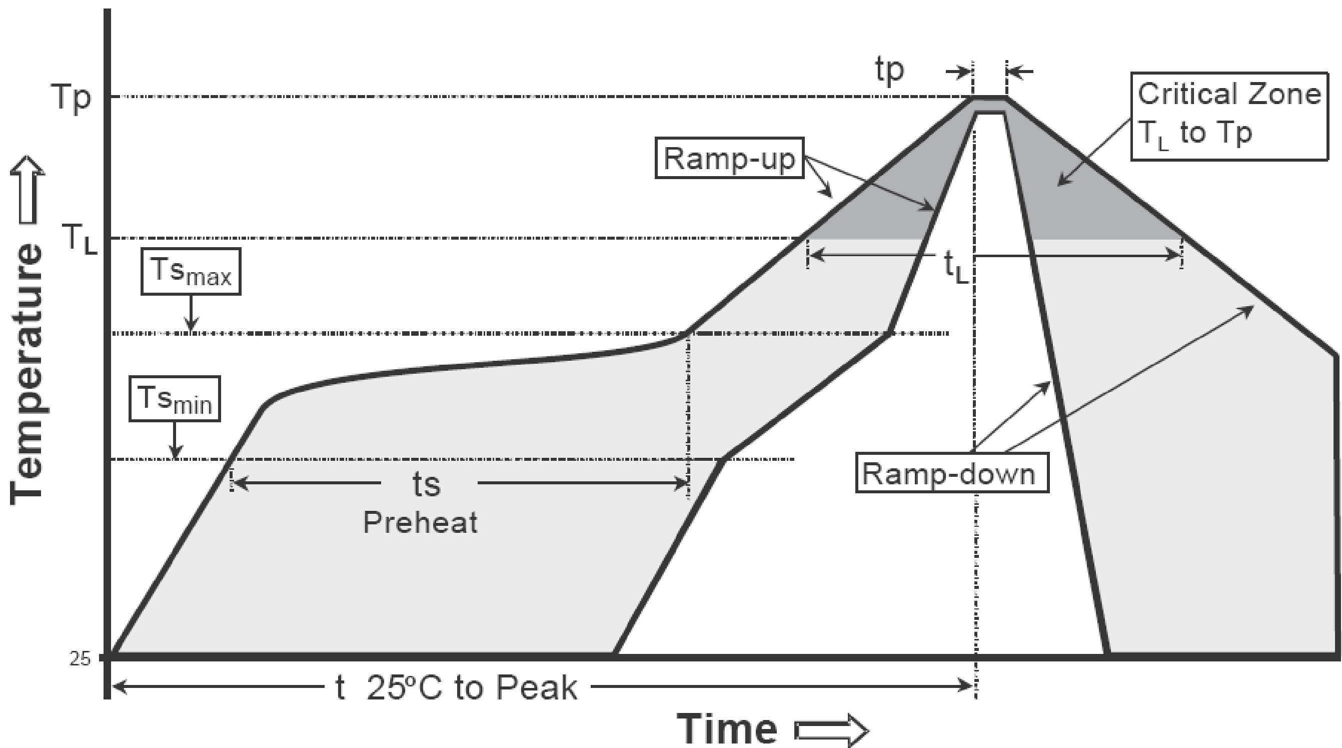
Item	Symbol	Tolerance	SMA-SF
Carrier width	A	0.1	2.90
Carrier length	B	0.1	5.50
Carrier depth	C	0.1	2.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	50.00
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	12.00
Reel width	W_1	1.0	18.00

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

Reel Packing

REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
7"	2,000	4.0	20,000	183*155*183	178	382*356*392	160,000	12.0
13"	7,500	4.0	15,000	335*335*38	330	350*330*360	120,000	11.5

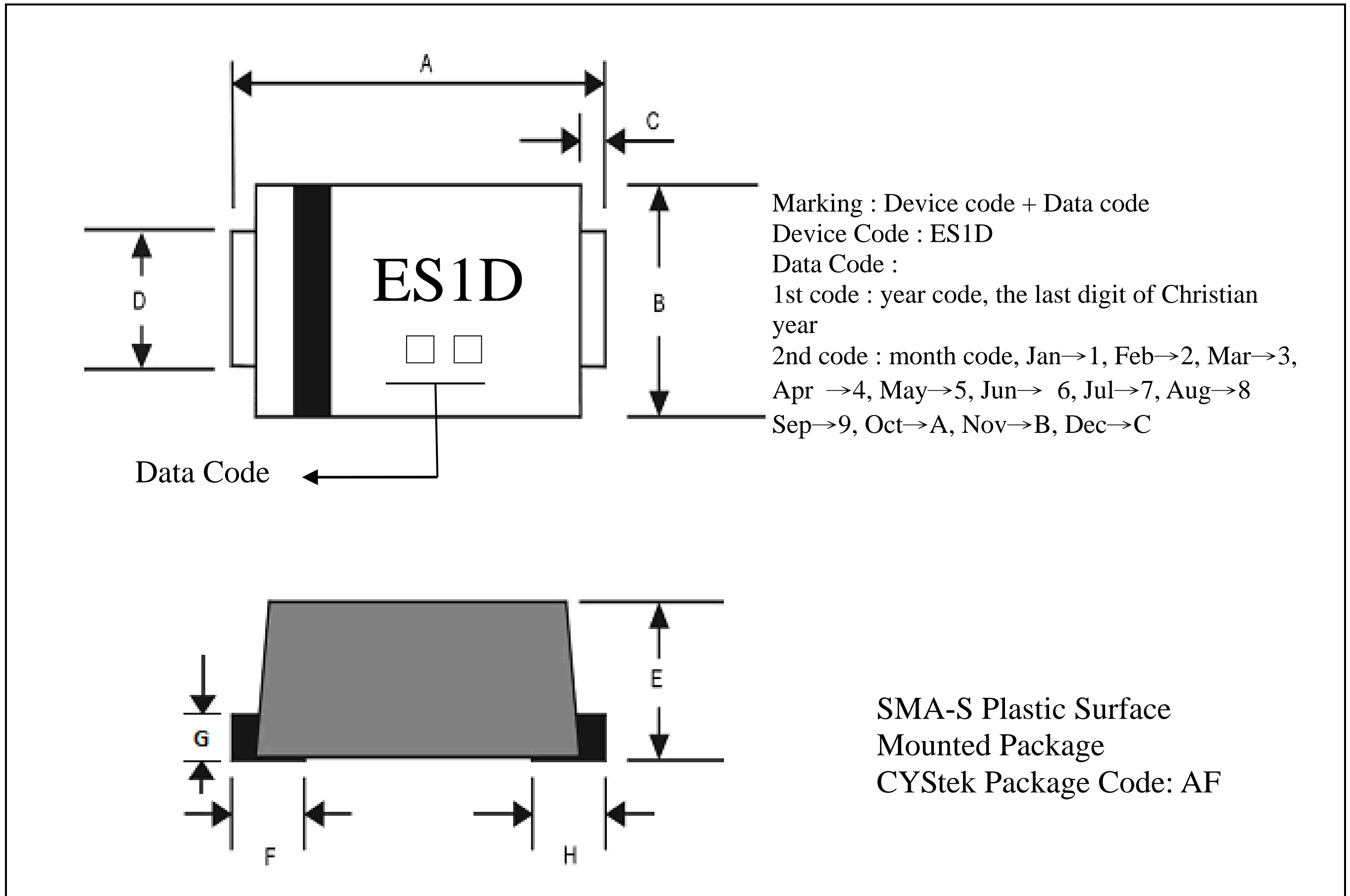
Recommended temperature profile for IR reflow



Profile feature	Soldering Condition
Average ramp-up rate (Tsmax to Tp)	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 150°C 200°C 60~120 seconds
Ramp Up Rate (Ts max to TL)	3°C/second max
Time maintained above: −Temperature (TL) − Time (tL)	 217°C 60~260 seconds
Peak Temperature(TP)	255~260°C
Time within 5°C of actual peak temperature(tp)	10-30 seconds
Ramp down rate	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SMA-S Dimension



*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.197	0.213	5.00	5.40	E	0.057	0.069	1.45	1.75
B	0.091	0.106	2.30	2.70	F	0.040*		1.00*	
C	0.012*		0.30*		H	0.040*		1.00*	
D	0.055	0.063	1.40	1.60	G	0.005	0.007	0.13	0.17

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.

- CYStek reserves the right to make changes to its products without notice.
- CYStek ***semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.***
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.