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		机密等级 Confidential	B		
技术文件 Technical	Sanan Semiconductor SDS120J015H5 规格书 Sanan Semiconductor SDS120J015H5 Datasheet	版别 Rev. No.	2.0.0	生效日期 Effective Date	2025/12/26

Sanan Semiconductor

SDS120J015H5 Datasheet Ver. 2.0.0

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湖南三安半导体有限责任公司

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文件制/修订纪录 Revision History				
版本 Version	制(修)订者 Reviser	制(修)订日期 Date	变更章节 Change Sec.	修 改 说 明 Description
1.0.0	曹文长	2024/06/07	ALL	初版发行
2.0.0	吴婷	2025/12/26	Package Information	更新为委外代厂 POD

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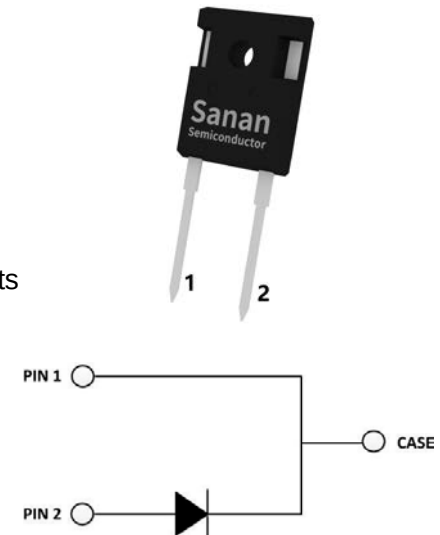
5th Generation 1200V/15A SiC Schottky Barrier Diode

Features

- Revolutionary semiconductor material - Silicon Carbide (SiC)
- No reverse recovery
- High-speed switching performance
- Temperature-independent switching behavior
- System cost / size savings due to reduced cooling requirements
- Junction temperature range from -55°C to 175°C
- RoHS compliant

Potential Applications

- Industrial power supplies: Industrial UPS
- Battery chargers
- Solar inverters
- Switch mode power supplies



Package Type: TO-247-2L



Description

The SDS120J015H5 SiC Schottky Barrier Diode (SBD) has been developed using Sanan's advanced 5th generation SiC SBD technology with the highest performance and reliability. It registers higher efficiency, higher operation temperature and lower loss and can be operated at higher frequency than Si-based solutions. As to the Schottky structure, it shows no recovery at turn-off and allows a low leakage current with reverse voltage up to 1200V. It can contribute to system miniaturization and achieve lightweight system design. Using RoHS compliant components, it is qualified for use in industrial application.

Product Specifications

Device	V _{RRM}	I _F (135°C)	V _F (25°C)	Q _C	Marking
SDS120J015H5	1200V	22A	1.40V	70nC	DS120015H5

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Table 1. Maximum Ratings

(T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Value	Unit	Test conditions
Repetitive peak reverse voltage	V _{RRM}	1200	V	T _C = 25°C
Surge peak reverse voltage	V _{RSM}	1200		T _C = 25°C
DC reverse voltage	V _{DC}	1200		T _C = 25°C
Continuous forward current	I _F	42	A	T _C = 25°C
		22		T _C = 135°C
		15		T _C = 154°C
Surge non-repetitive forward current	I _{FSM}	154	A	T _C = 25°C, t _p = 10ms, half sine pulse
		137		T _C = 150°C, t _p = 10ms, half sine pulse
Non-repetitive peak forward current	I _{F,Max}	974	A	T _C = 25°C, t _p = 10μs, pulse
Surge repetitive forward current	I _{FRM}	115	A	T _C = 25°C, t _p = 10ms, half sine wave D = 0.1
Power dissipation	P _{tot}	234	W	T _C = 25°C
i ² t value	∫i ² dt	118	A ² s	T _C = 25°C, t _p = 10ms
Operating junction temperature	T _j	-55~175	°C	
Storage temperature	T _{stg}	-55~175	°C	
Mounting torque	M	1	Nm	M3 screw

Table 2. Thermal Resistance

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Thermal resistance from junction to case	R _{th(j-c)}	/	0.64	/	°C/W	

Table 3. Static Electrical Characteristics

($T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	1200	/	/	V	$I_R = 100\ \mu\text{A}$
Forward voltage	V_F	/	1.40	1.60	V	$I_F = 15\text{A}$, $T_j = 25^\circ\text{C}$
		/	2.00	2.40		$I_F = 15\text{A}$, $T_j = 175^\circ\text{C}$
Reverse current	I_R	/	5	60	μA	$V_R = 1200\text{V}$, $T_j = 25^\circ\text{C}$
		/	20	240		$V_R = 1200\text{V}$, $T_j = 175^\circ\text{C}$

Table 4. Dynamic Electrical Characteristics

($T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
Total capacitance	C	/	1013	/	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$
		/	65	/		$V_R = 400\text{V}$, $f = 1\text{MHz}$
		/	47	/		$V_R = 800\text{V}$, $f = 1\text{MHz}$
Total capacitive charge	Q_C	/	70	/	nC	$V_R = 800\text{V}$
Capacitance stored energy	E_C	/	20	/	μJ	$V_R = 800\text{V}$

Electrical Characteristic Diagrams

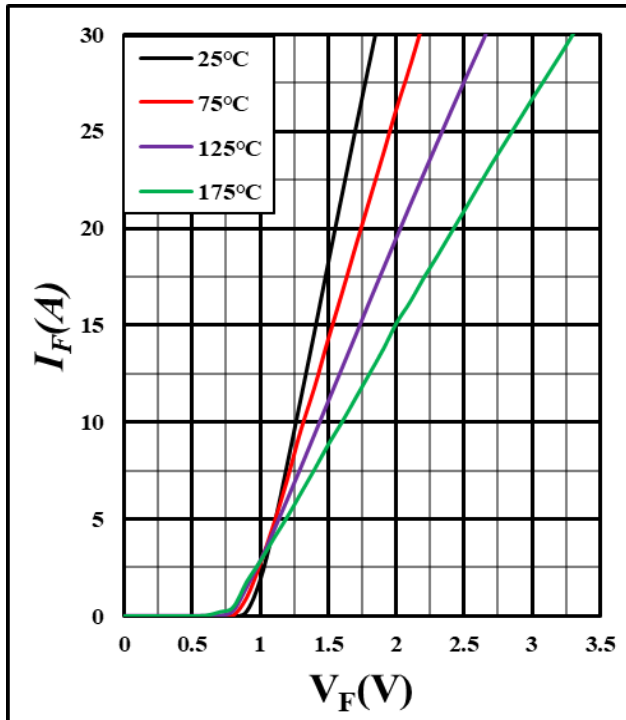


Figure 1. Forward characteristics

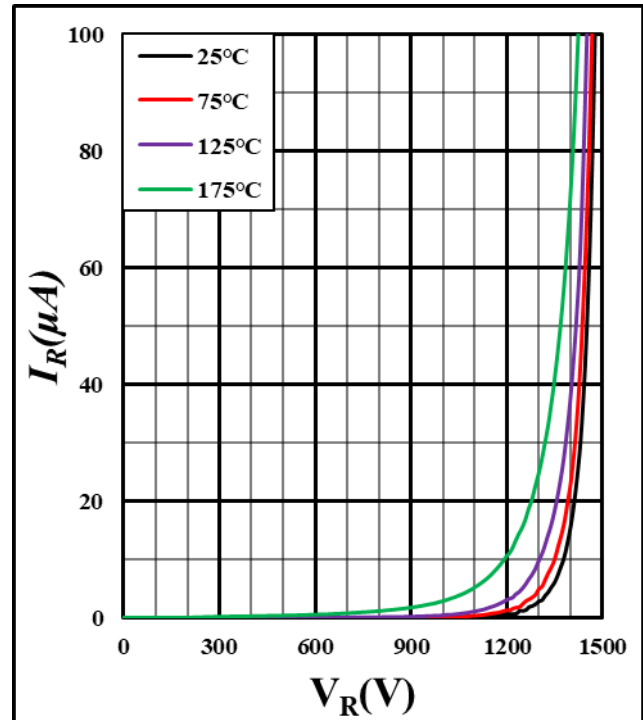


Figure 2. Reverse characteristics

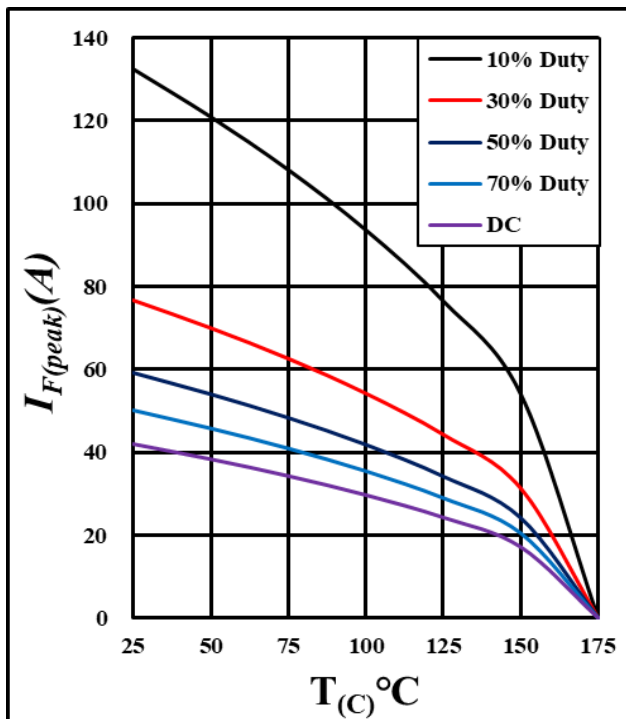


Figure 3. Current derating

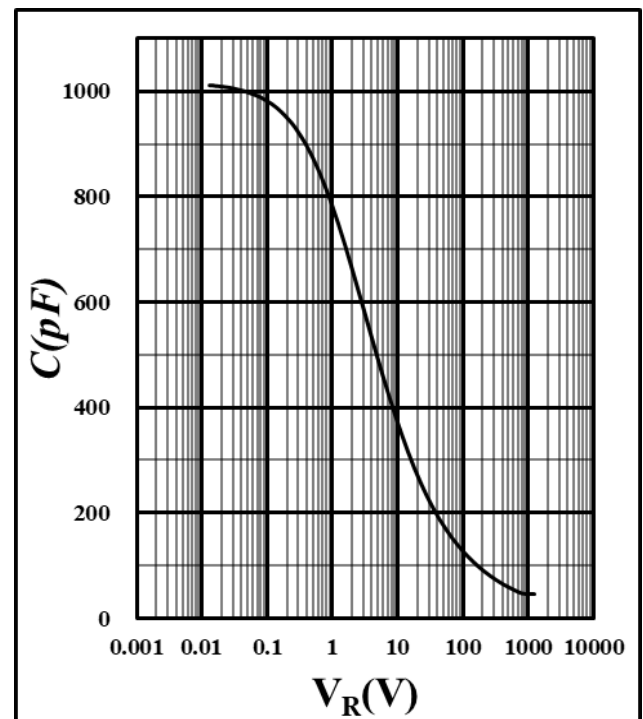


Figure 4. Capacitance vs. reverse voltage

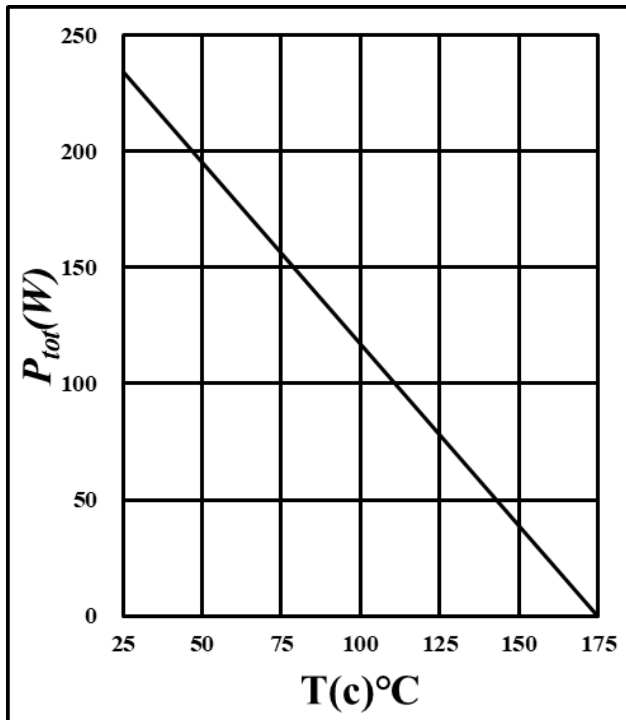


Figure 5. Power derating

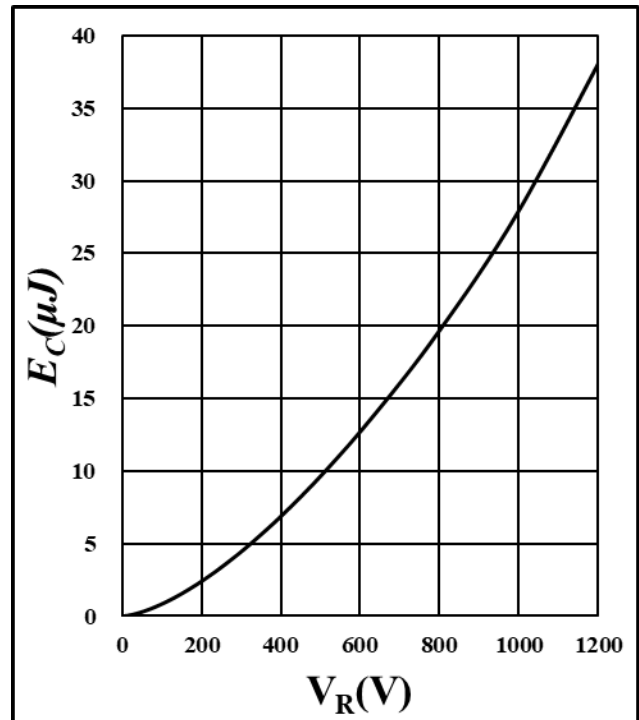


Figure 6. Capacitance stored energy

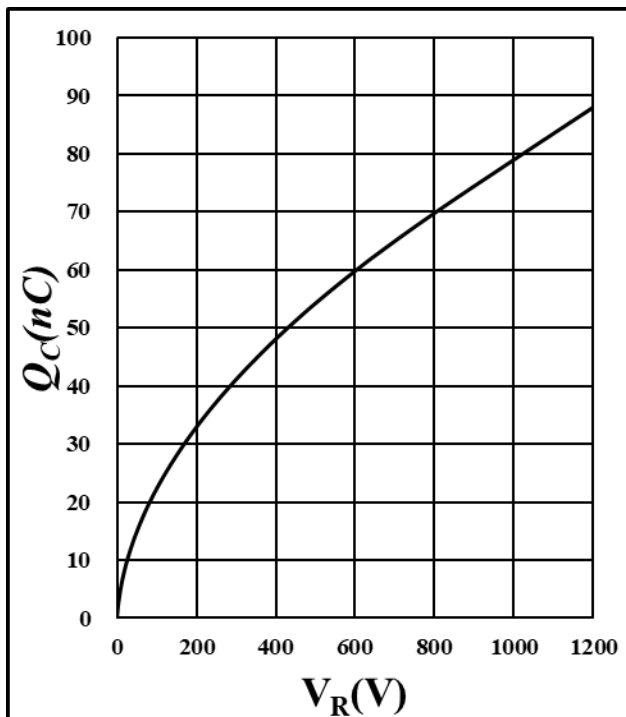


Figure 7. Total capacitance charge vs. reverse voltage

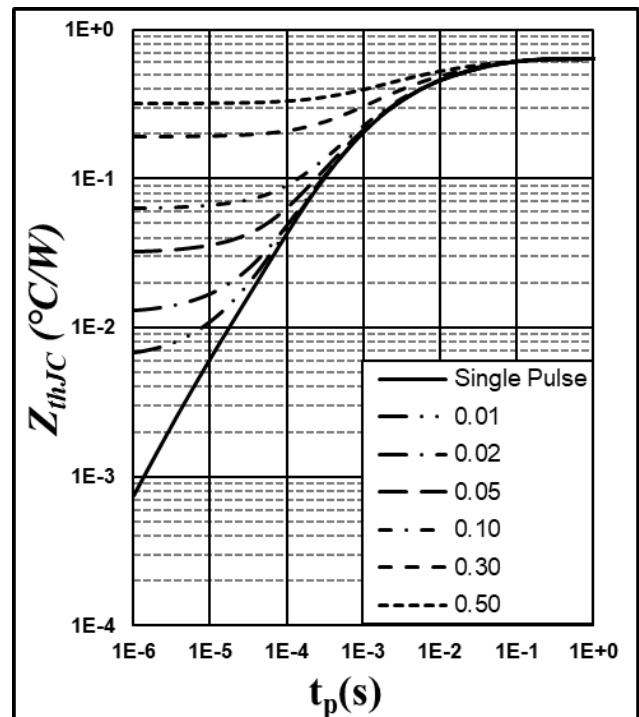
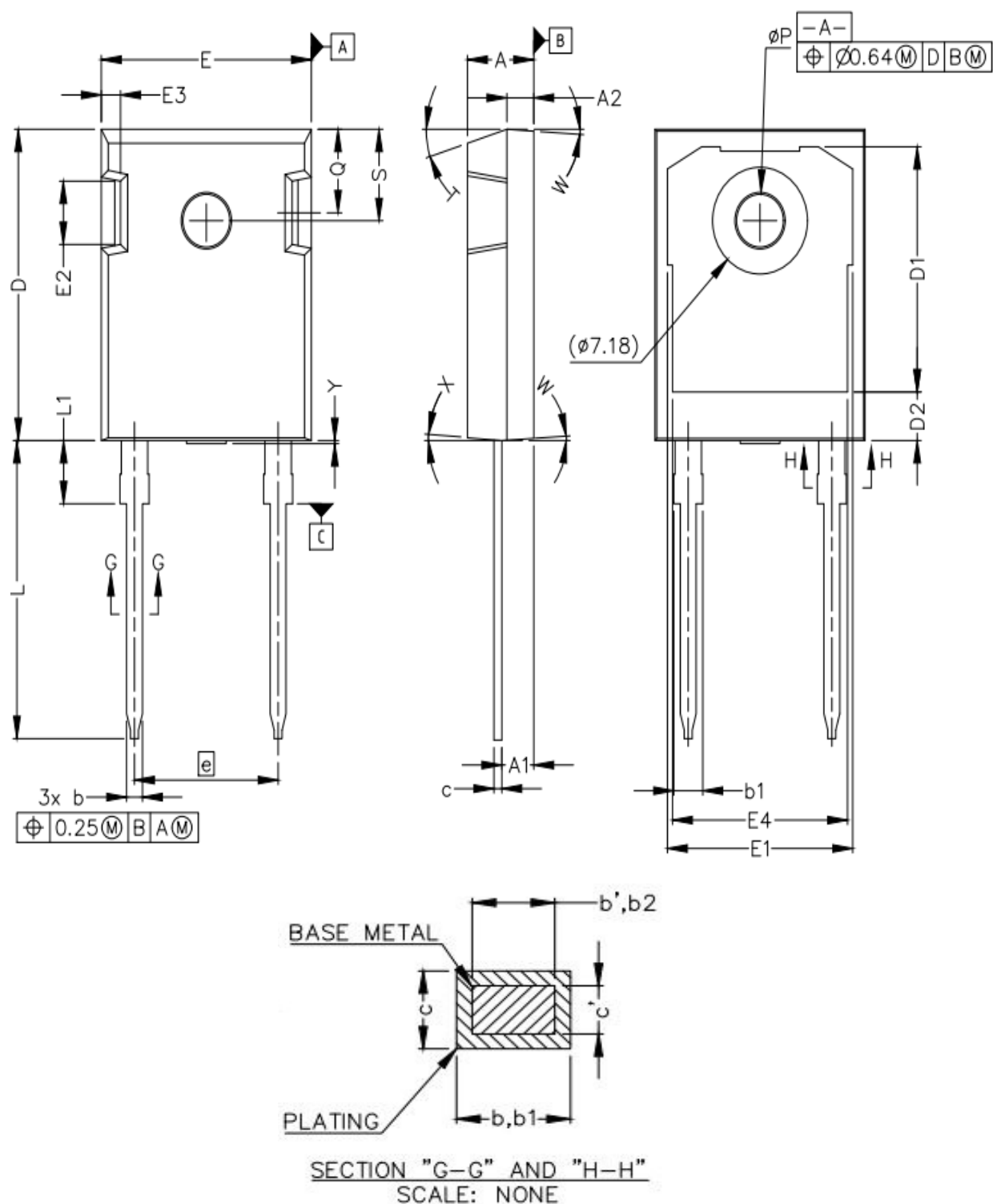


Figure 8. Transient Thermal Impedance
(Junction - Case)



Dimension unit: [mm]		
Symbol	Min	Max
A	4.83	5.21
A1	2.29	2.54
A2	1.91	2.16
b'	1.07	1.28
b	1.07	1.33
b1	1.91	2.41
b2	1.91	2.16
c'	0.55	0.65
c	0.55	0.68
D	20.80	21.10
D1	16.25	17.35
D2	2.86	3.16
E	15.75	16.13
E1	13.10	14.15
E2	3.68	5.10
E3	1.00	1.90
E4	12.38	13.43
e	10.88 BSC	
L	19.81	20.32
L1	4.10	4.40
øP	3.51	3.65
Q	5.49	6.00
S	6.04	6.30
T	17.5° REF.	
W	3.5° REF.	
X	4° REF.	
Y	0.00	0.50

Recommended Solder Pad Layout

Note: All dimensions are in mm



TO-247-2L

Ordering Information

Part number	SDS120J015H5-ISATH
Package	TO-247-2L
Unit quantity	450 EA
Packing type	Tube

Important Notices – Read Carefully

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