

Schottky Diode

preliminary

$$V_{RRM} = 200 \text{ V}$$

$$I_{FAV} = 15 \text{ A}$$

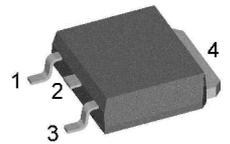
$$V_F = 0.78 \text{ V}$$

High Performance Schottky Diode
Low Loss and Soft Recovery
Single Diode

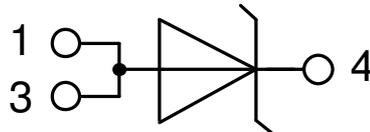
Part number

DSA15IM200UC

Marking on Product: SFMAUI



Backside: cathode



Features / Advantages:

- Very low V_f
- Extremely low switching losses
- Low I_{rm} values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching

Applications:

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

Package: TO-252 (DPak)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Terms Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the product in aviation, in health or live endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

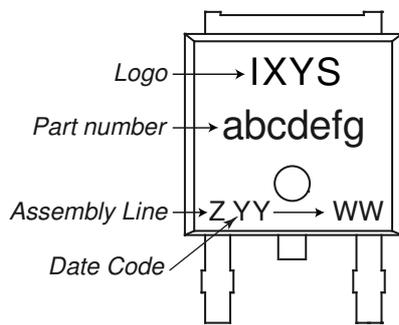
Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					200	V
V_{RRM}	max. repetitive reverse blocking voltage					200	V
I_R	reverse current, drain current	$V_R = 200\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		250	μA
		$V_R = 200\text{ V}$		$T_{VJ} = 125^\circ\text{C}$		2.5	mA
V_F	forward voltage drop	$I_F = 15\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		0.94	V
		$I_F = 30\text{ A}$				1.10	V
		$I_F = 15\text{ A}$		$T_{VJ} = 125^\circ\text{C}$		0.78	V
		$I_F = 30\text{ A}$				0.95	V
I_{FAV}	average forward current	$T_C = 150^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		15	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.53	V
r_F	slope resistance					10.8	m Ω
R_{thJC}	thermal resistance junction to case					2	K/W
R_{thCH}	thermal resistance case to heatsink				0.50		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		75	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		200	A
C_J	junction capacitance	$V_R = 24\text{ V}$	$f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		67	pF

preliminary

Package TO-252 (DPak)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal ¹⁾			20	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				0.3		g
F_C	mounting force with clip		20		60	N

¹⁾ I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking



Part description

- D = Diode
- S = Schottky Diode
- A = low VF
- 15 = Current Rating [A]
- IM = Single Diode
- 200 = Reverse Voltage [V]
- UC = TO-252AA (DPak)

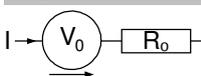
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA15IM200UC	SFMAUI	Tape & Reel	2500	510408

Similar Part	Package	Voltage class
DSB15IM30UC	TO-252AA (DPak)	30
DSA15IM45UC	TO-252AA (DPak)	45
DSA10IM100UC	TO-252AA (DPak)	100
DSA15IM150UC	TO-252AA (DPak)	150

Equivalent Circuits for Simulation

* on die level

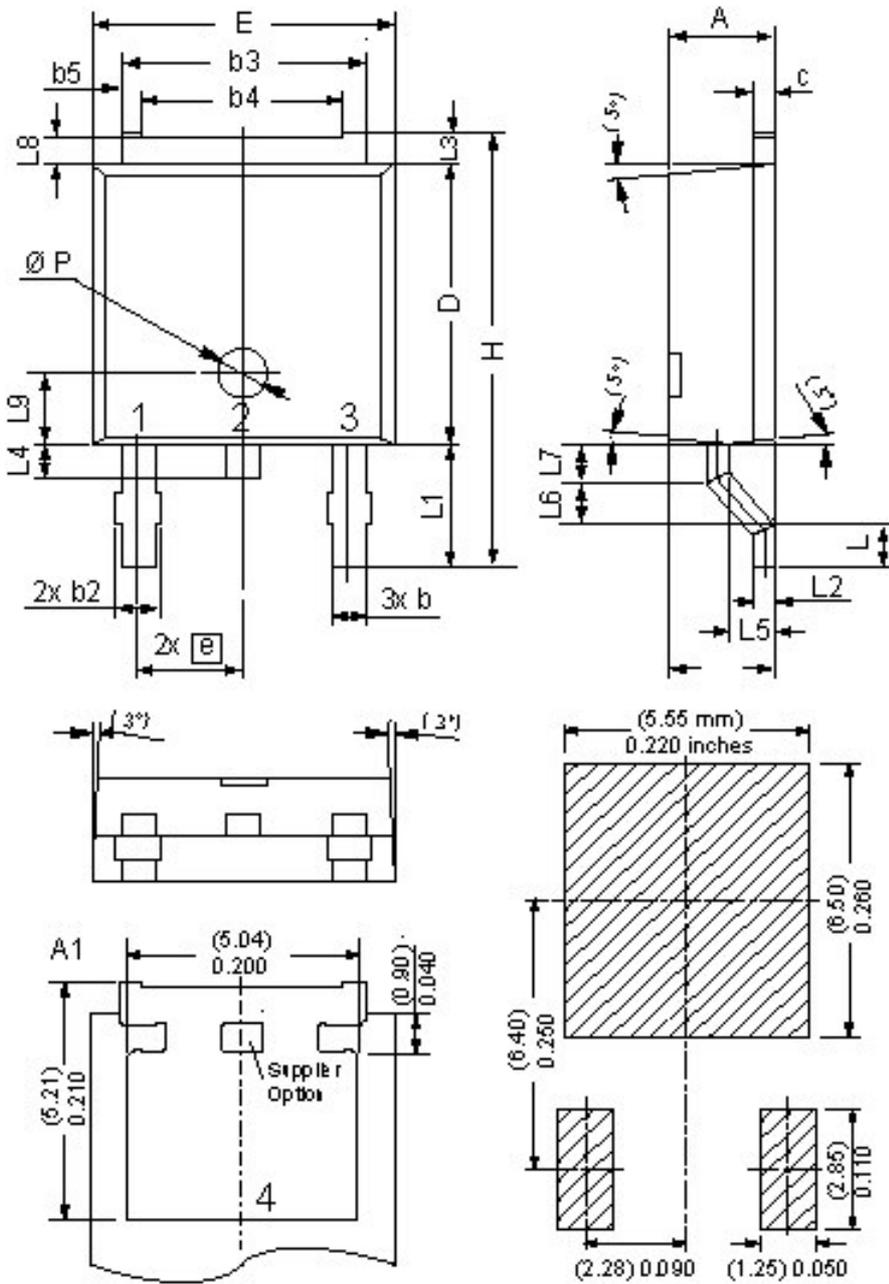
$T_{VJ} = 175\text{ °C}$



Schottky

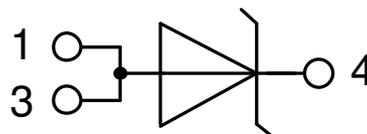
$V_{0\ max}$	threshold voltage	0.53	V
$R_{0\ max}$	slope resistance *	7.6	mΩ

Outlines TO-252 (DPak)



Dim	Millimeters		Inches	
	min	max	min	max
A	2.20	2.40	0.087	0.094
A1	2.10	2.50	0.083	0.098
b	0.66	0.86	0.026	0.034
b2	-	0.96	-	0.038
b3	5.04	5.64	0.198	0.222
b4	4.34	BSC	0.171	BSC
b5	0.50	BSC	0.020	BSC
c	0.40	0.86	0.016	0.034
D	5.90	6.30	0.232	0.248
E	6.40	6.80	0.252	0.268
e	2.10	2.50	0.083	0.098
H	9.20	10.10	0.362	0.398
L	0.55	1.28	0.022	0.050
L1	2.50	2.90	0.098	0.114
L2	0.40	0.60	0.016	0.024
L3	0.50	0.90	0.020	0.035
L4	0.60	1.00	0.024	0.039
L5	0.82	1.22	0.032	0.048
L6	0.79	0.99	0.031	0.039
L7	0.81	1.01	0.032	0.040
L8	0.40	0.80	0.016	0.031
L9	1.50	BSC	0.059	BSC
Ø P	1.00	BSC	0.039	BSC

Recommended min. footprint



Schottky

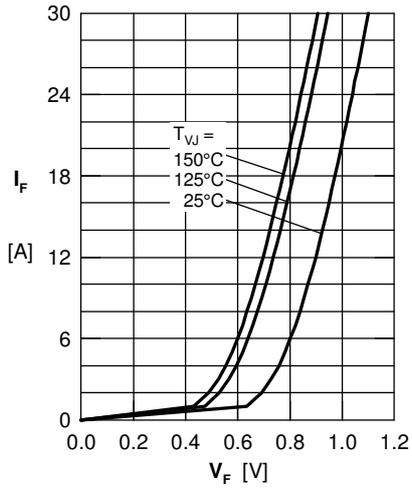


Fig. 1 Maximum forward voltage drop characteristics

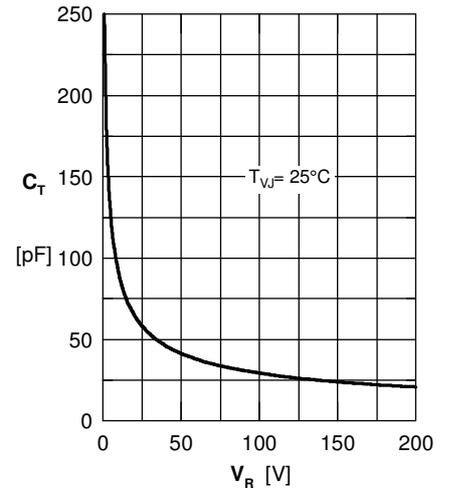


Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

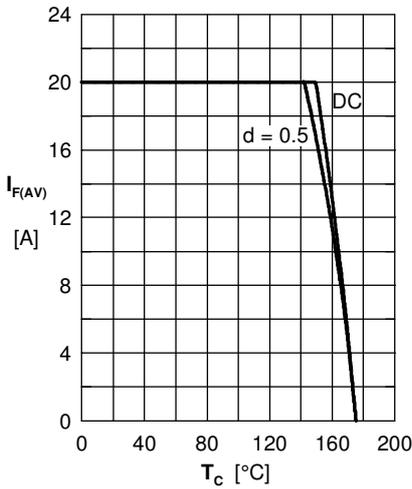


Fig. 4 Avg: forward current $I_{F(AV)}$ vs. case temperature T_C

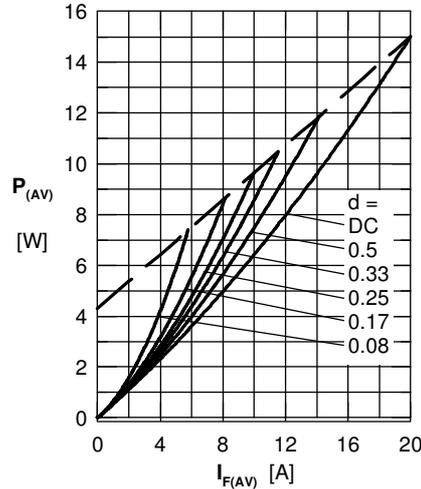


Fig. 5 Forward power loss characteristics

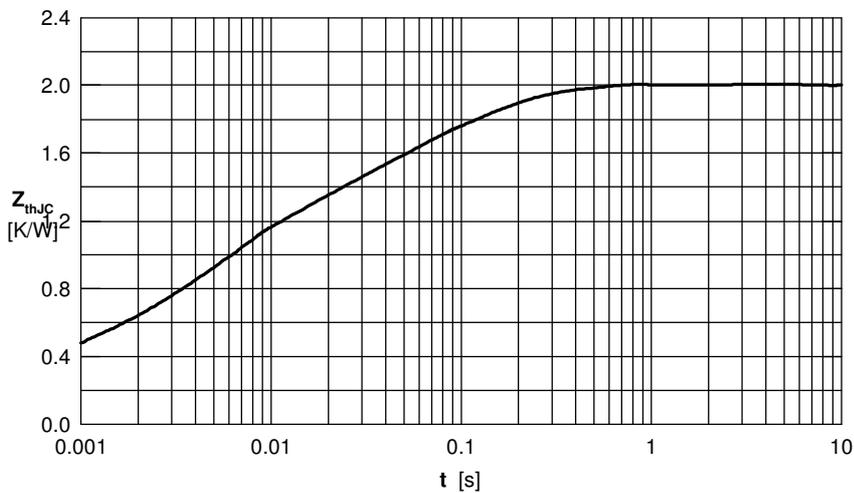


Fig. 6 Transient thermal impedance junction to case