

# Schottky Diode Gen<sup>2</sup>

$$V_{RRM} = 100\text{ V}$$

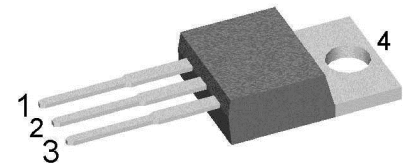
$$I_{FAV} = 2 \times 40\text{ A}$$

$$V_F = 0.8\text{ V}$$

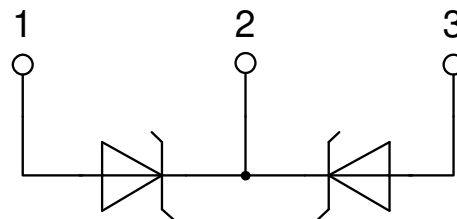
High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DSA80C100PB**



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-220

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

### Disclaimer Notice

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Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					100	V
$V_{RRM}$	max. repetitive reverse blocking voltage					100	V
$I_R$	reverse current, drain current	$V_R = 100\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		680	$\mu\text{A}$
		$V_R = 100\text{ V}$		$T_{VJ} = 125^\circ\text{C}$		7	mA
$V_F$	forward voltage drop	$I_F = 40\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		0.97	V
		$I_F = 80\text{ A}$				1.19	V
		$I_F = 40\text{ A}$		$T_{VJ} = 125^\circ\text{C}$		0.80	V
		$I_F = 80\text{ A}$				1.05	V
$I_{FAV}$	average forward current	$T_C = 150^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		40	A
$V_{F0}$	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.45	V
$r_F$	slope resistance					6.5	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					0.6	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.5		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		250	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		490	A
$C_J$	junction capacitance	$V_R = 12\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^\circ\text{C}$		406	pF



Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			35	A
$T_{VJ}$	virtual junction temperature		-55		175	°C
$T_{op}$	operation temperature		-55		150	°C
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N

**Product Marking**



**Part description**

- D = Diode
- S = Schottky Diode
- A = low VF
- 80 = Current Rating [A]
- C = Common Cathode
- 100 = Reverse Voltage [V]
- PB = TO-220AB (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA80C100PB	DSA80C100PB	Tube	50	502795

Similar Part	Package	Voltage class
DSA70C100HB	TO-247AD (3)	100

**Equivalent Circuits for Simulation**

*\* on die level*

$T_{VJ} = 175^{\circ}C$



**Schottky**

$V_{0\ max}$	threshold voltage	0.45	V
$R_{0\ max}$	slope resistance *	3.3	mΩ



**Outlines TO-220**



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125





**Schottky**

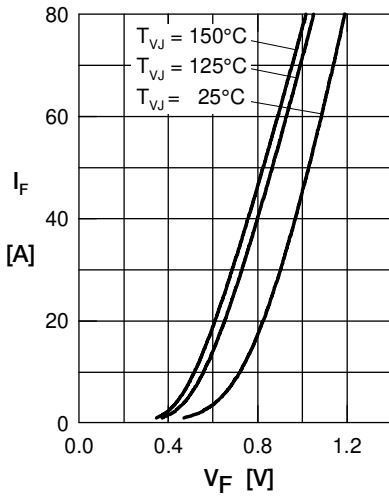


Fig. 1 Max. forward voltage drop characteristics

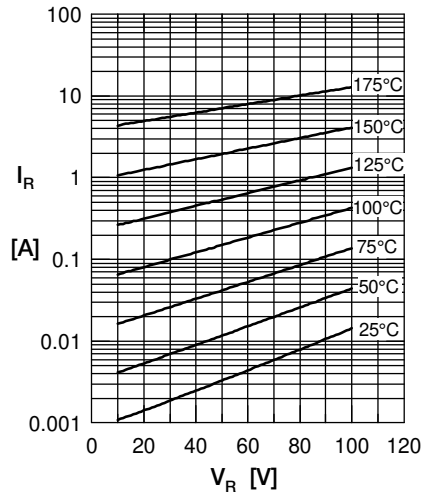


Fig. 2 Typ. value of rev. current  $I_R$  vs. reverse voltage  $V_R$

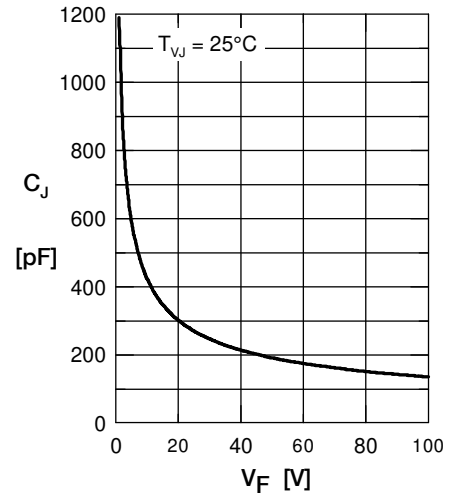


Fig. 3 Typ. junction capacitance  $C_J$  vs. reverse voltage  $V_R$

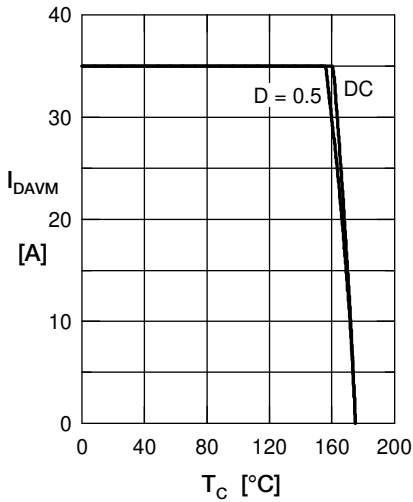


Fig. 4 Average forward current  $I_{F(AV)}$  vs. case temp.  $T_C$

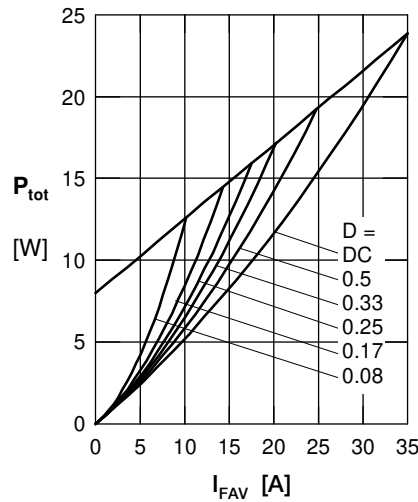


Fig. 5 Forward power loss characteristics

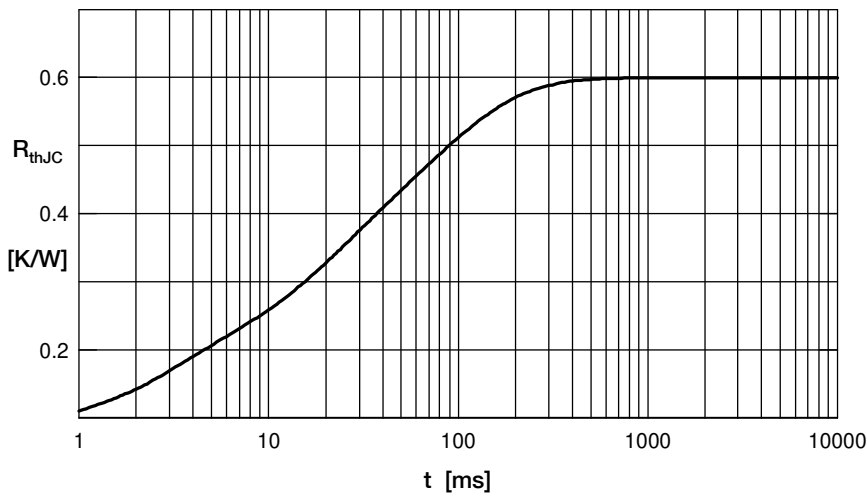


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode