

Schottky Diode Gen²

preliminary

$$V_{RRM} = 45V$$

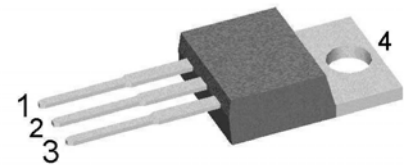
$$I_{FAV} = 2 \times 10A$$

$$V_F = 0.61V$$

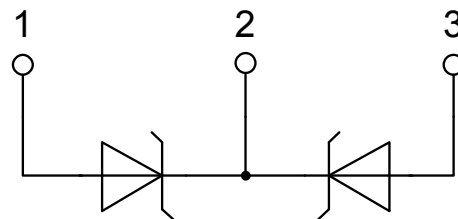
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSA20C45PB



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

Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					45	V
V_{RRM}	max. repetitive reverse blocking voltage					45	V
I_R	reverse current, drain current	$V_R = 45\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		200	μA
		$V_R = 45\text{ V}$		$T_{VJ} = 125^\circ\text{C}$		2	mA
V_F	forward voltage drop	$I_F = 10\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		0.72	V
						$I_F = 20\text{ A}$	
		$I_F = 10\text{ A}$		$T_{VJ} = 125^\circ\text{C}$		0.61	V
						$I_F = 20\text{ A}$	
I_{FAV}	average forward current	$T_C = 160^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		10	A
V_{FO}	threshold voltage			$T_{VJ} = 175^\circ\text{C}$		0.43	V
r_F	slope resistance					12.7	m Ω
R_{thJC}	thermal resistance junction to case					2.4	K/W
R_{thCH}	thermal resistance case to heatsink				0.50		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		65	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		260	A
C_J	junction capacitance	$V_R = 5\text{ V}$	$f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		326	pF

preliminary

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

Product Marking



Part number

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

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA20C45PB	DSA20C45PB	Tube	50	503675

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175\text{ °C}$



Schottky

$V_{0\max}$	threshold voltage	0.43	V
$R_{0\max}$	slope resistance *	9.6	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
$\varnothing P$	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

