

Schottky Diode Gen ²

preliminary

$$V_{RRM} = 15V$$

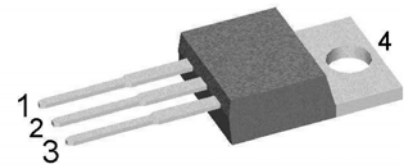
$$I_{FAV} = 2 \times 20A$$

$$V_F = 0.39V$$

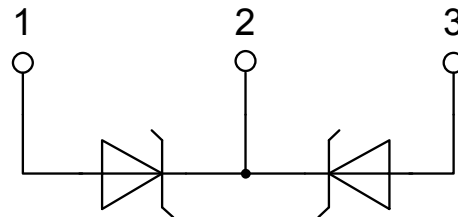
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSB40C15PB



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

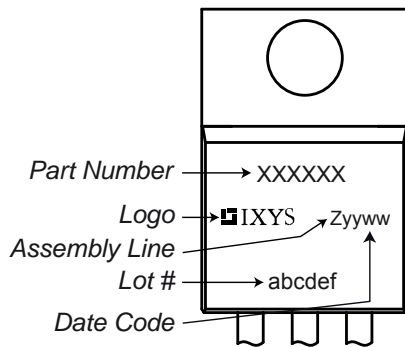
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Schottky				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage					15	V	
V_{RRM}	max. repetitive reverse blocking voltage					15	V	
I_R	reverse current, drain current	$V_R = 15\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			5	mA	
		$V_R = 15\text{ V}$	$T_{VJ} = 100^\circ\text{C}$			40	mA	
V_F	forward voltage drop	$I_F = 20\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			0.48	V	
		$I_F = 40\text{ A}$				0.60	V	
		$I_F = 20\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.39	V	
		$I_F = 40\text{ A}$				0.54	V	
I_{FAV}	average forward current	$T_C = 130^\circ\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^\circ\text{C}$			20	A	
V_{FO}	threshold voltage	} for power loss calculation only				0.23	V	
r_F	slope resistance					7.2	mΩ	
R_{thJC}	thermal resistance junction to case					1.75	K/W	
R_{thCH}	thermal resistance case to heatsink			0.50			K/W	
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$			70	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$			390	A
C_J	junction capacitance	$V_R = 3\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^\circ\text{C}$	1.28	nF		

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		150	°C
T_{op}	operation temperature		-55		125	°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

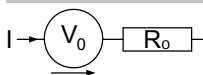
- D = Diode
- S = Schottky Diode
- B = ultra low VF
- 40 = Current Rating [A]
- C = Common Cathode
- 15 = Reverse Voltage [V]
- PB = TO-220AB (3)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSB40C15PB	DSB40C15PB	Tube	50	502802

Equivalent Circuits for Simulation

* on die level

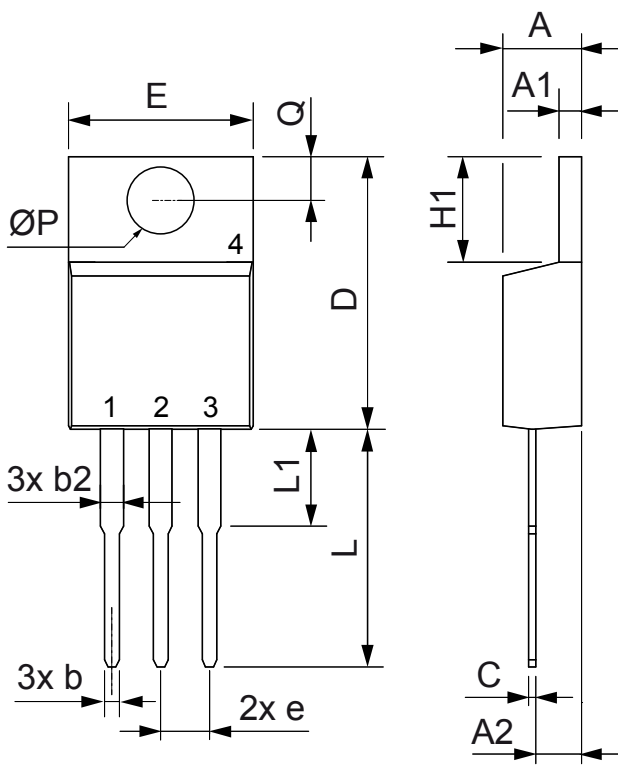
$T_{VJ} = 150\text{ °C}$



Schottky

$V_{0\max}$	threshold voltage	0.23	V
$R_{0\max}$	slope resistance *	4.1	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

