

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

$$V_{RRM} = 100V$$

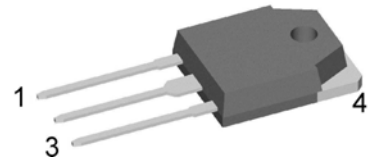
$$I_{FAV} = 2 \times 25A$$

$$V_F = 0.72V$$

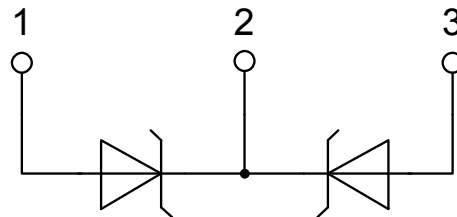
High Performance Schottky Diode  
Low Loss and Soft Recovery  
Common Cathode

Part number

DSA50C100QB



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

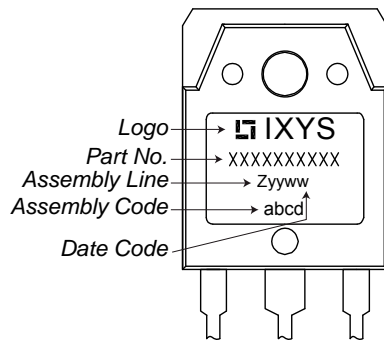
### Package: TO-3P

- Industry standard outline compatible with TO-247
- RoHS compliant
- Epoxy meets UL 94V-0

Schottky				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			100	V
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			100	V
$I_R$	reverse current, drain current	$V_R = 100 V$	$T_{VJ} = 25^{\circ}C$		450	$\mu A$
		$V_R = 100 V$	$T_{VJ} = 125^{\circ}C$		5	mA
$V_F$	forward voltage drop	$I_F = 25 A$	$T_{VJ} = 25^{\circ}C$		0.90	V
		$I_F = 50 A$			1.07	V
		$I_F = 25 A$	$T_{VJ} = 125^{\circ}C$		0.72	V
		$I_F = 50 A$			0.90	V
$I_{FAV}$	average forward current	$T_C = 155^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 175^{\circ}C$		25	A
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}C$		0.45	V
$r_F$	slope resistance				7.3	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				0.95	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		160	W
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		440	A
$C_J$	junction capacitance	$V_R = 12 V \quad f = 1 \text{ MHz}$	$T_{VJ} = 25^{\circ}C$		289	pF

Package TO-3P			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			50	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>				5		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

### Product Marking



### Part number

- D = Diode
- S = Schottky Diode
- A = low VF
- 50 = Current Rating [A]
- C = Common Cathode
- 100 = Reverse Voltage [V]
- QB = TO-3P (3)

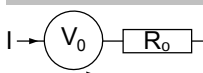
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA50C100QB	DSA50C100QB	Tube	30	504033

Similar Part	Package	Voltage class
DSA50C100HB	TO-247AD (3)	100
DSA60C100PB	TO-220AB (3)	100

### Equivalent Circuits for Simulation

\* on die level

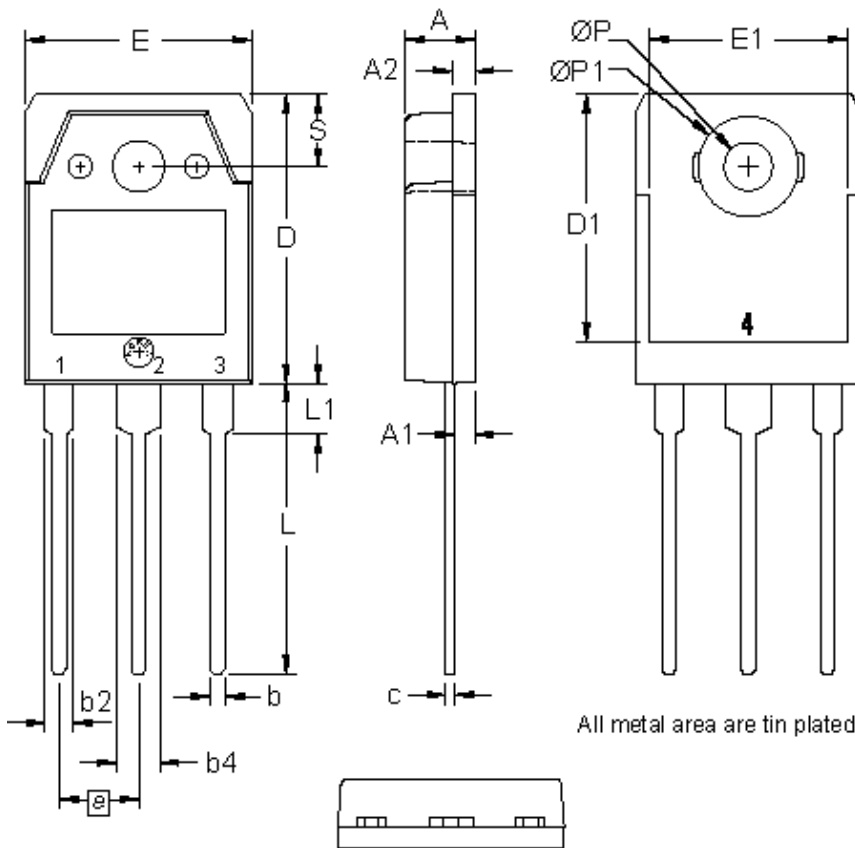
$T_{VJ} = 175\text{ °C}$



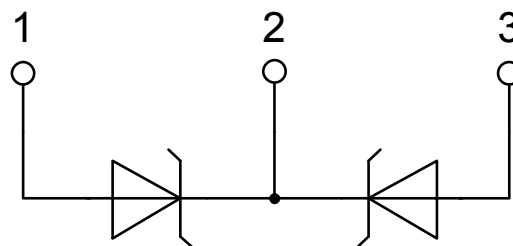
Schottky

$V_{0\ max}$	threshold voltage	0.45	V
$R_{0\ max}$	slope resistance *	4.7	mΩ

**Outlines TO-3P**



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45 BSC		0.215 BSC	
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
Ø P	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201



## Schottky

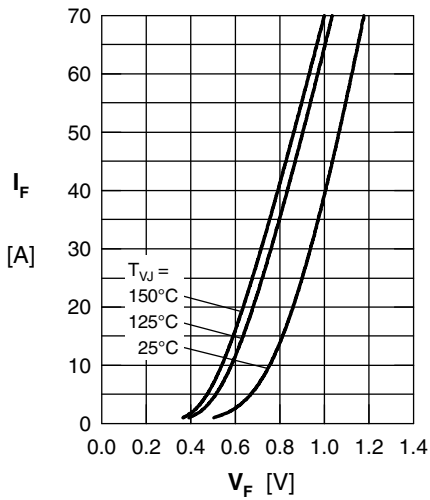


Fig. 1 Maximum forward voltage drop characteristics

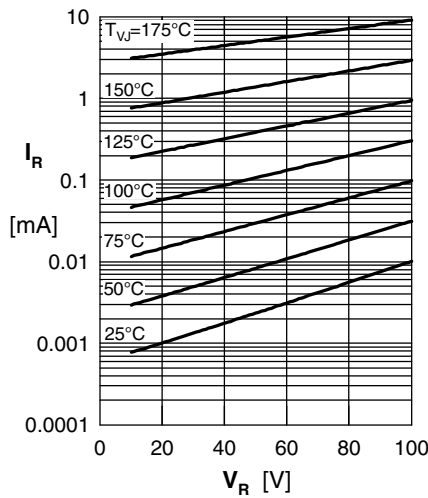


Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$

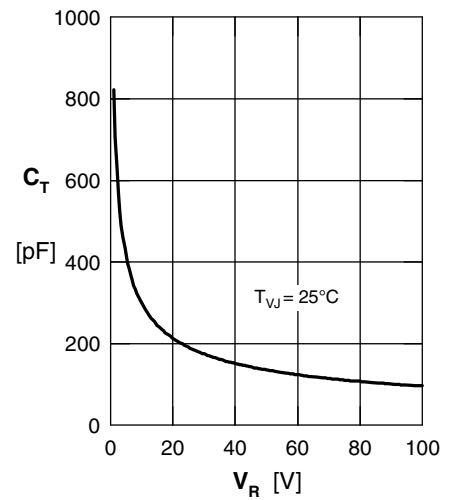


Fig. 3 Typ. junction capacitance  $C_T$  vs. reverse voltage  $V_R$

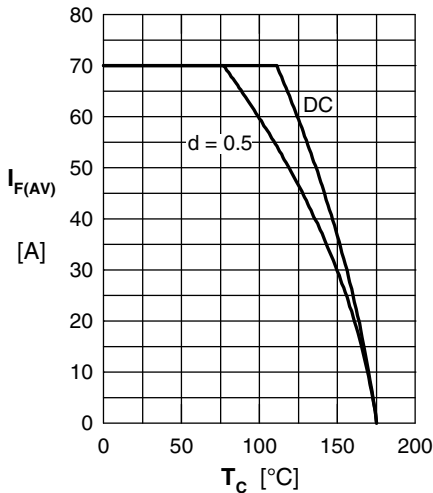


Fig. 4 Average forward current  $I_{F(AV)}$  vs. case temperature  $T_C$

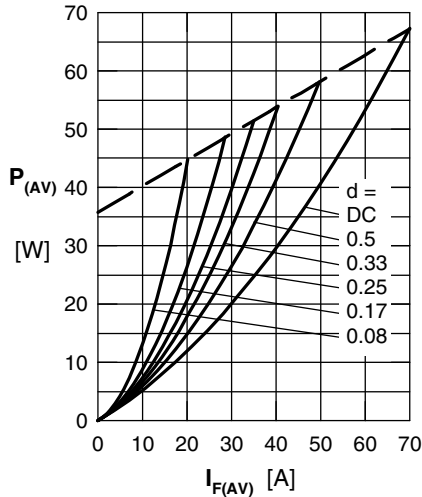


Fig. 5 Forward power loss characteristics

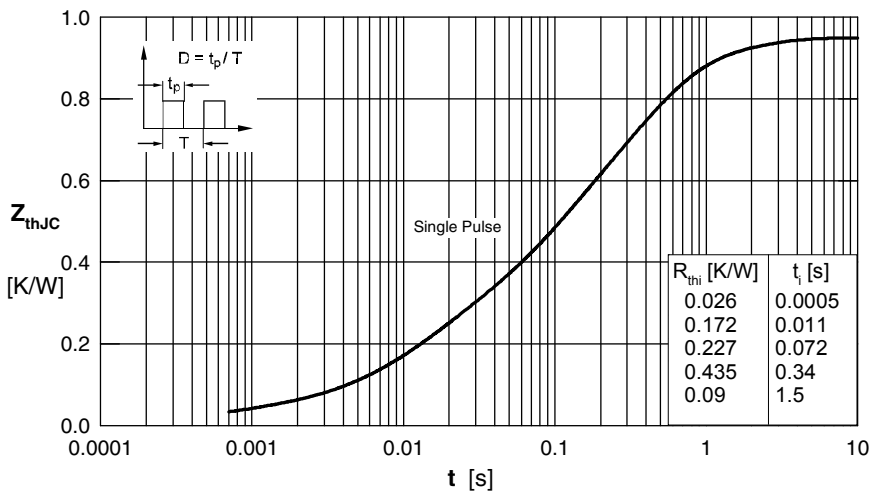


Fig. 6 Transient thermal impedance junction to case

Note: All curves are per diode