

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

$$V_{RRM} = 150\text{ V}$$

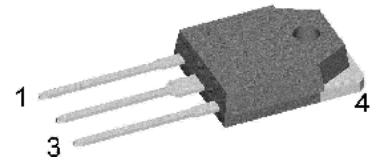
$$I_{FAV} = 2 \times 60\text{ A}$$

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

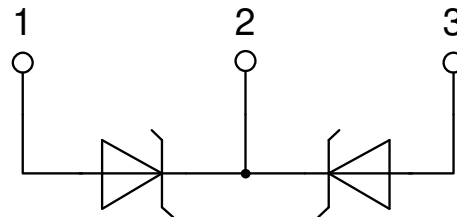
High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DSA120C150QB**



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

### Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).

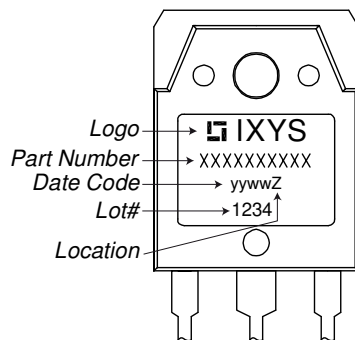


Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					150	V
$V_{RRM}$	max. repetitive reverse blocking voltage					150	V
$I_R$	reverse current, drain current	$V_R = 150\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		900	$\mu\text{A}$
		$V_R = 150\text{ V}$		$T_{VJ} = 125^\circ\text{C}$		5	mA
$V_F$	forward voltage drop	$I_F = 60\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		0.93	V
		$I_F = 120\text{ A}$				1.13	V
		$I_F = 60\text{ A}$		$T_{VJ} = 125^\circ\text{C}$		0.80	V
		$I_F = 120\text{ A}$				1.03	V
$I_{FAV}$	average forward current	$T_C = 150^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		60	A
$V_{FO}$	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.51	V
$r_F$	slope resistance					3.9	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					0.4	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.3		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		375	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		1.20	kA
$C_J$	junction capacitance	$V_R = 24\text{ V}$	$f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		481	pF



Package TO-3P			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			70	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 description**

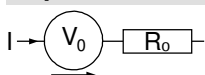
- D = Diode
- S = Schottky Diode
- A = low VF
- 120 = Current Rating [A]
- C = Common Cathode
- 150 = Reverse Voltage [V]
- QB = TO-3P (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA120C150QB	DSA120C150QB	Tube	30	501788
			Tube		

**Equivalent Circuits for Simulation**

*\* on die level*

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

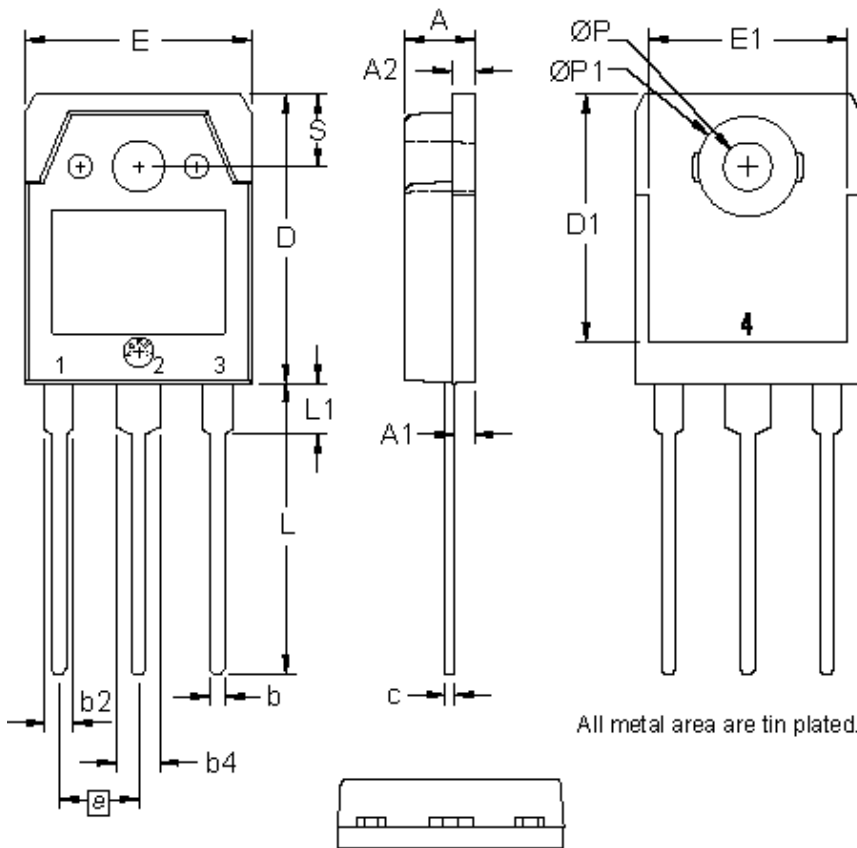


**Schottky**

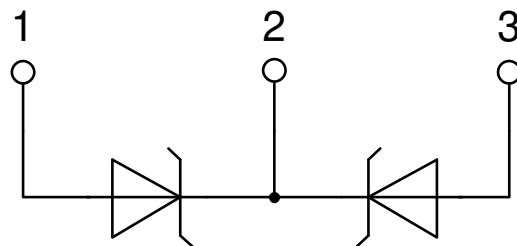
$V_{0\ max}$	threshold voltage	0.51	V
$R_{0\ max}$	slope resistance *	1.3	mΩ



**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**

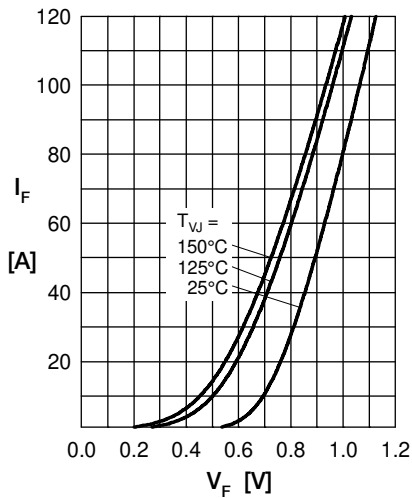


Fig. 1 Max. forward voltage drop characteristics

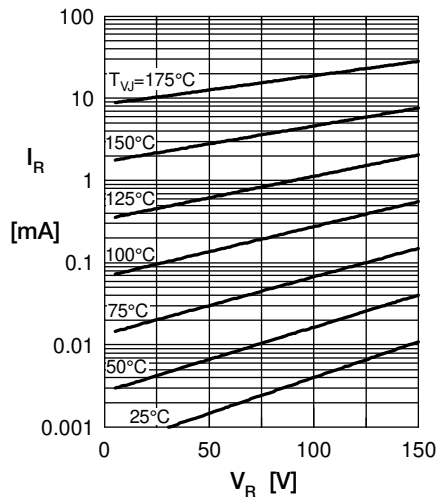


Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$

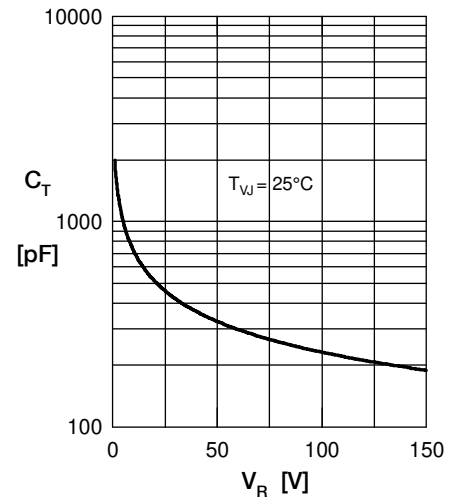


Fig. 3 Typ. junction capacitance  $C_T$  vs. reverse voltage  $V_R$

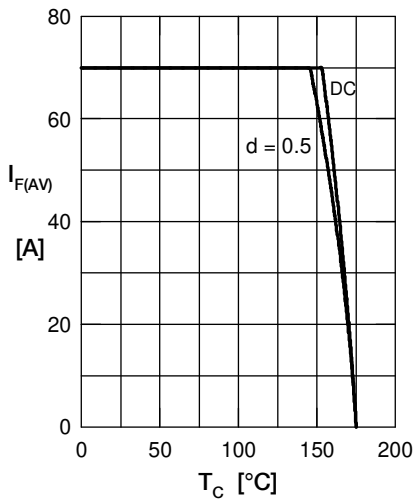


Fig. 4 Average forward current  $I_{F(AV)}$  vs. case temp  $T_C$

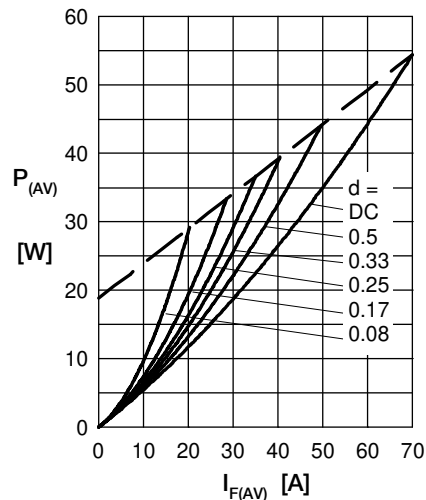


Fig. 5 Forward power loss characteristics

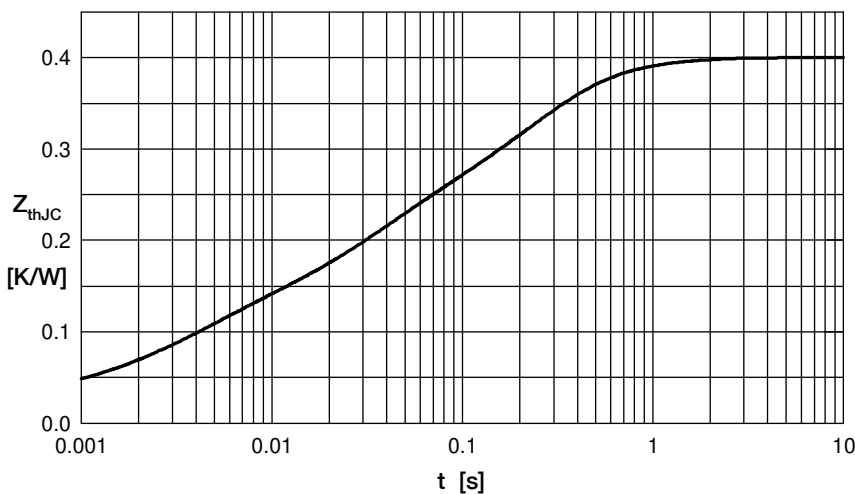


Fig. 6 Transient thermal impedance junction to case at various duty cycles

$R_{thi}$	$t_i$
0.022	0.0002
0.082	0.0032
0.104	0.026
0.165	0.208
0.027	0.79

Note: All curves are per diode