

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

$$V_{RRM} = 150V$$

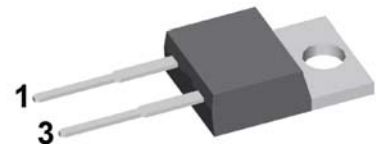
$$I_{FAV} = 30A$$

$$V_F = 0.8V$$

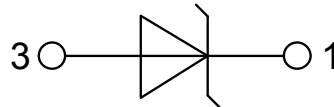
High Performance Schottky Diode  
Low Loss and Soft Recovery  
Single Diode

Part number

DSA30I150PA



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:

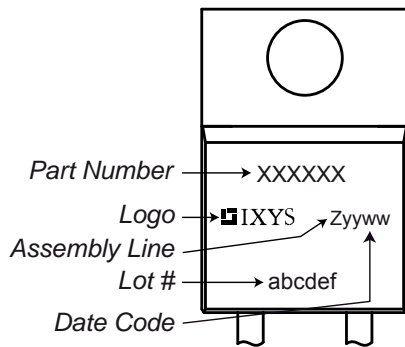
- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

### Package: TO-220

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

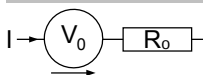
Schottky				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			150	V
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			150	V
$I_R$	reverse current, drain current	$V_R = 150 V$	$T_{VJ} = 25^{\circ}C$		450	$\mu A$
		$V_R = 150 V$	$T_{VJ} = 125^{\circ}C$		5	mA
$V_F$	forward voltage drop	$I_F = 30 A$	$T_{VJ} = 25^{\circ}C$		0.93	V
		$I_F = 60 A$			1.09	V
		$I_F = 30 A$	$T_{VJ} = 125^{\circ}C$		0.80	V
		$I_F = 60 A$			0.98	V
$I_{FAV}$	average forward current	$T_C = 150^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 175^{\circ}C$		30	A
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}C$		0.55	V
$r_F$	slope resistance				6	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				0.85	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		175	W
$I_{FSM}$	max. forward surge current	$t = 10 ms; (50 Hz), sine; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		390	A
$C_J$	junction capacitance	$V_R = 12 V \quad f = 1 MHz$	$T_{VJ} = 25^{\circ}C$		289	pF

Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			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 number**

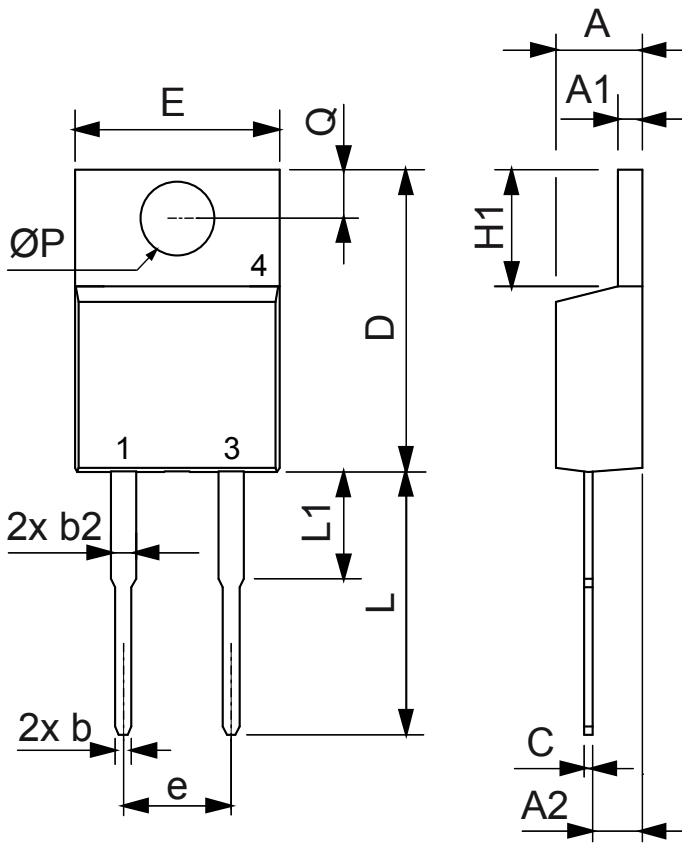
- D = Diode
- S = Schottky Diode
- A = low VF
- 30 = Current Rating [A]
- I = Single Diode
- 150 = Reverse Voltage [V]
- PA = TO-220AC (2)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA30I150PA	DSA30I150PA	Tube	50	504155

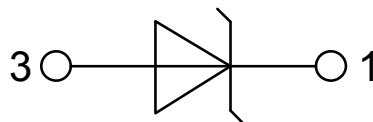
**Equivalent Circuits for Simulation**
*\* on die level*
 $T_{VJ} = 175\text{ °C}$ 

**Schottky**

$V_{0\max}$	threshold voltage	0.55	V
$R_{0\max}$	slope resistance *	2.8	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	5.08	BSC	0.200	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



## Schottky

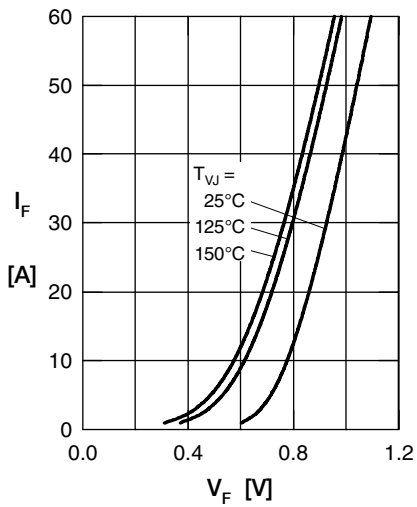


Fig. 1 Maximum forward voltage drop characteristics

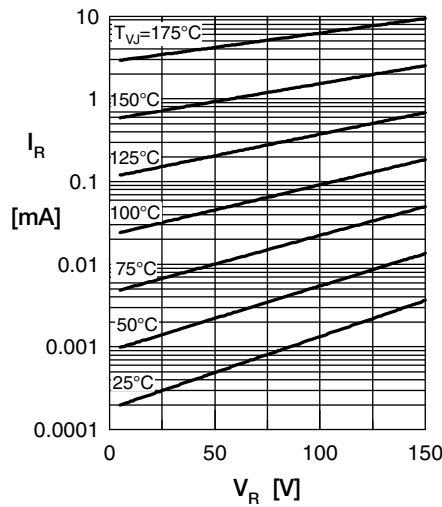


Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$

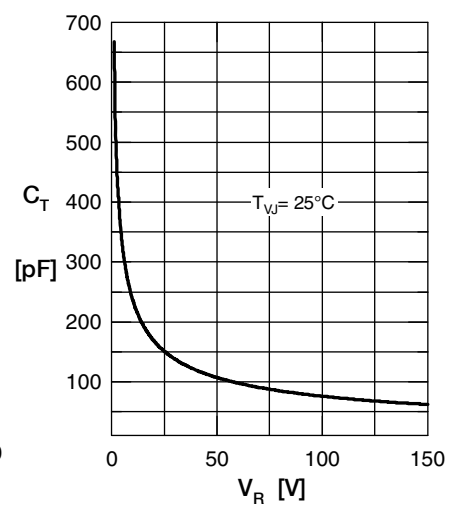


Fig. 3 Typ. junction capacitance  $C_T$  vs. reverse voltage  $V_R$

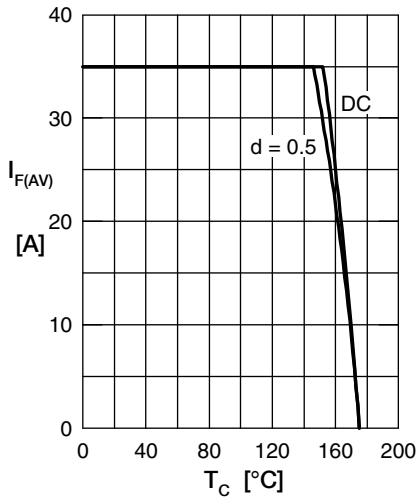


Fig. 4 Average forward current  $I_{F(AV)}$  vs. case temp.  $T_C$

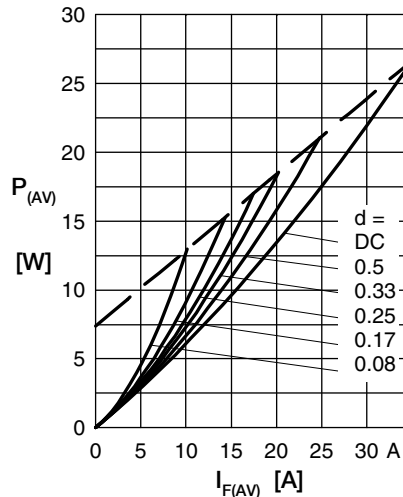


Fig. 5 Forward power loss characteristics

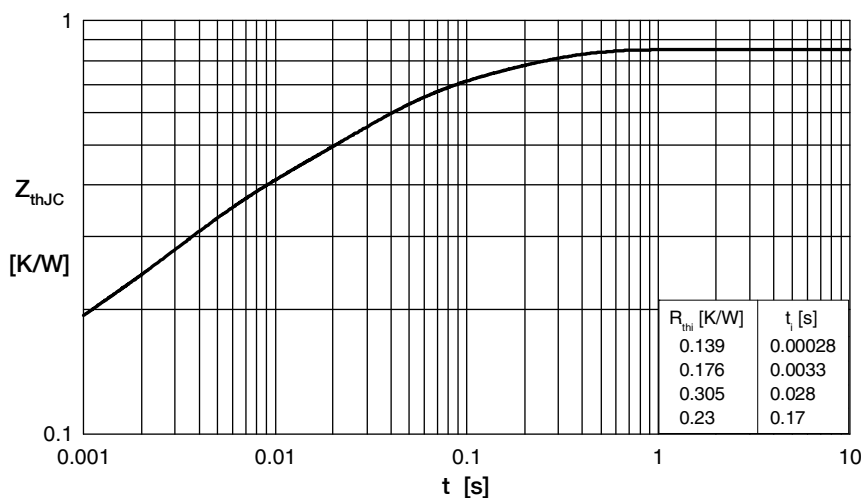


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode

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