

Schottky Diode Gen<sup>2</sup>

preliminary

$$V_{RRM} = 2 \times 60V$$

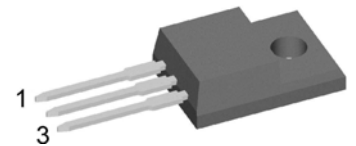
$$I_{FAV} = 10A$$

$$V_F = 0.62V$$

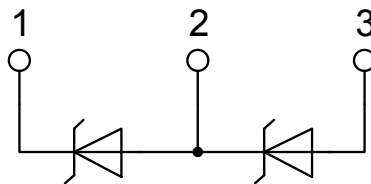
High Performance Schottky Diode  
Low Loss and Soft Recovery  
Phase leg

Part number

DSB10P60PN



Backside: isolated

**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-220FP

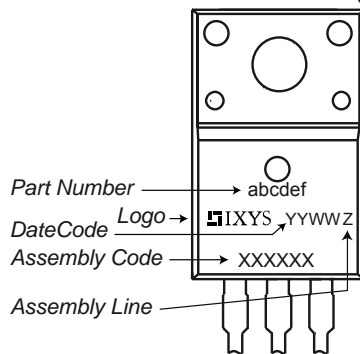
- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

Schottky				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage				60	V
$V_{RRM}$	max. repetitive reverse blocking voltage				60	V
$I_R$	reverse current, drain current	$V_R = 60\text{ V}$			4	mA
		$V_R = 60\text{ V}$			35	mA
$V_F$	forward voltage drop	$I_F = 10\text{ A}$			0.69	V
		$I_F = 20\text{ A}$			0.93	V
		$I_F = 10\text{ A}$			0.62	V
		$I_F = 20\text{ A}$			0.82	V
$I_{FAV}$	average forward current	$T_c = 110^\circ\text{C}$			10	A
		rectangular $d = 0.5$				
$V_{FO}$	threshold voltage	} for power loss calculation only			0.44	V
$r_F$	slope resistance				16.1	mΩ
$R_{thJC}$	thermal resistance junction to case				4.5	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$P_{tot}$	total power dissipation				30	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$			240	A
$C_J$	junction capacitance	$V_R = 12\text{ V } f = 1\text{ MHz}$			149	pF

preliminary

Package TO-220FP		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			35	A
$T_{VJ}$	virtual junction temperature		-55		150	°C
$T_{op}$	operation temperature		-55		125	°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
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	1.6	1.0		mm
$d_{Spb/Apb}$		terminal to backside	2.5	2.5		mm
$V_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500		V
		t = 1 minute		2080		V

### Product Marking



### Part number

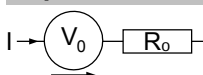
- D = Diode
- S = Schottky Diode
- B = ultra low VF
- 10 = Current Rating [A]
- P = Phase leg
- 60 = Reverse Voltage [V]
- PN = TO-220ABFP (3)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSB10P60PN	DSB10P60PN	Tube	50	511341

### Equivalent Circuits for Simulation

\* on die level

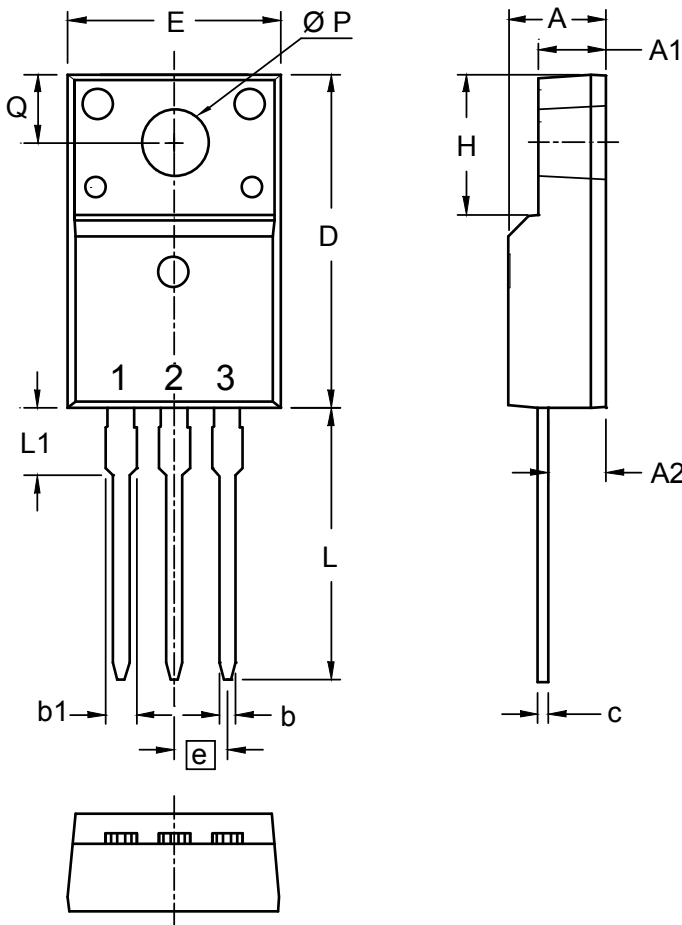
$T_{VJ} = 150$  °C



Schottky

$V_{0\ max}$	threshold voltage	0.44	V
$R_{0\ max}$	slope resistance *	13	mΩ

## Outlines TO-220FP



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
ØP	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134

