

Schottky Diode Gen ²

preliminary

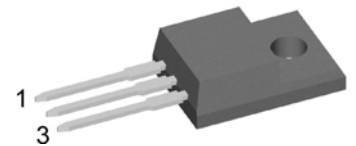
$$V_{RRM} = 2 \times 60V$$

$$I_{FAV} = 10A$$

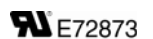
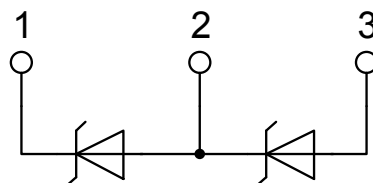
$$V_F = 0.62V$$

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

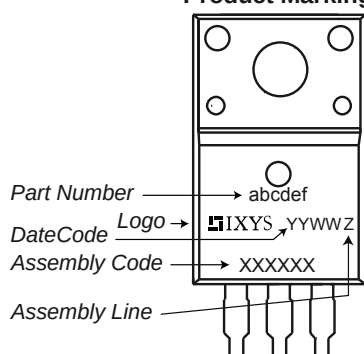
- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				60	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				60	V
I_R	reverse current, drain current	$V_R = 60\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			4	mA
		$V_R = 60\text{ V}$	$T_{VJ} = 100^{\circ}\text{C}$			35	mA
V_F	forward voltage drop	$I_F = 10\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			0.69	V
		$I_F = 20\text{ A}$				0.93	V
		$I_F = 10\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			0.62	V
		$I_F = 20\text{ A}$				0.82	V
I_{FAV}	average forward current	$T_C = 110^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}\text{C}$			10	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		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	$T_C = 25^{\circ}\text{C}$				30	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^{\circ}\text{C}$			240	A
C_J	junction capacitance	$V_R = 12\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		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
Weight					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

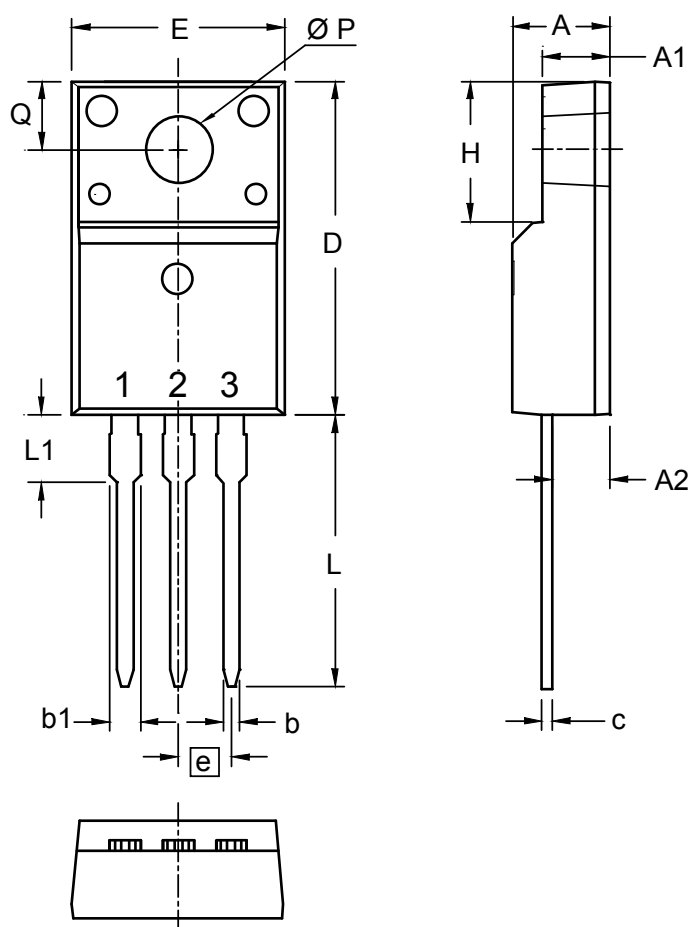
Equivalent Circuits for Simulation

* on die level

 $T_{VJ} = 150^\circ\text{C}$

		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

