Schottky Diode

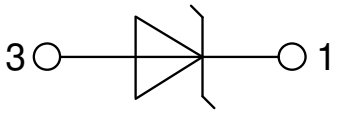
V_{RRM}	=	45 V
I_{FAV}	=	10 A
V_F	=	0.46 V

High Performance Schottky Diode
Low Loss and Soft Recovery
Single Diode

Part number

DSS10-0045B

Backside: cathode



Features / Advantages:

- Very low Vf
- Extremely low switching losses
- Low Irm 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

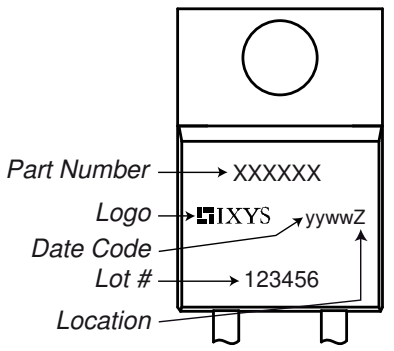
Package: TO-220

- 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°C			45	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			45	V
I_R	*reverse current, drain current*	V_R = 45 V	T_{VJ} = 25°C			10	mA
		V_R = 45 V	T_{VJ} = 100°C			50	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			0.51	V
		I_F = 20 A				0.67	V
		I_F = 10 A	T_{VJ} = 125°C			0.46	V
		I_F = 20 A				0.64	V
I_{FAV}	*average forward current*	T_C = 135°C	T_{VJ} = 150°C			10	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.27	V
r_F	*slope resistance* }					17.3	mΩ
R_{thJC}	*thermal resistance junction to case*					1.7	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.5		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			75	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			160	A
C_J	*junction capacitance*	V_R = 5 V f = 1 MHz	T_{VJ} = 25°C		497		pF
E_{AS}	*non-repetitive avalanche energy*	I_{AS} = 20 A L = 100 µH	T_{VJ} = 25°C			20	mJ
I_{AR}	*repetitive avalanche current*	V_A = 1.5·V_R typ. f = 10 kHz				2	A

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		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

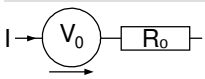
Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSS10-0045B	DSS10-0045B	Tube	50	475513

Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 150°C$



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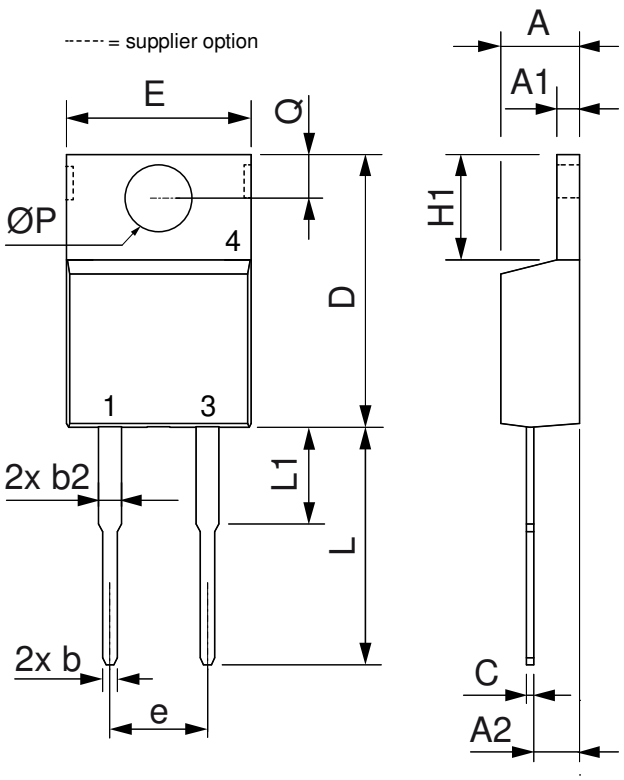
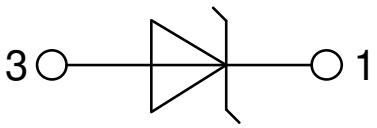
$V_{0\,max}$	*threshold voltage*	0.27	V
$R_{0\,max}$	*slope resistance **	14	mΩ

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
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125



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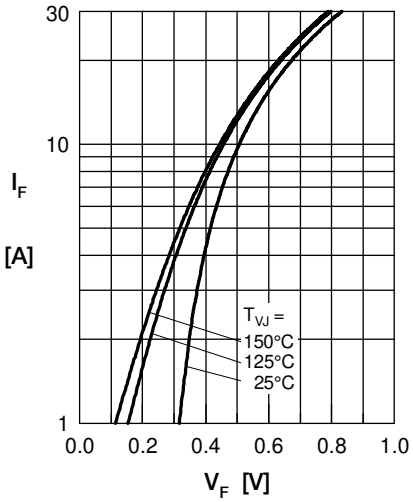

Fig. 1 Max, forward voltage drop characteristics

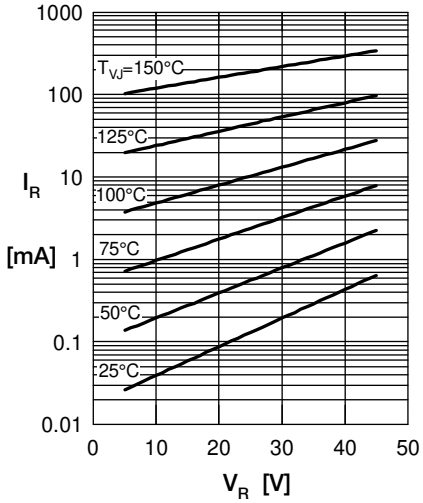

Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

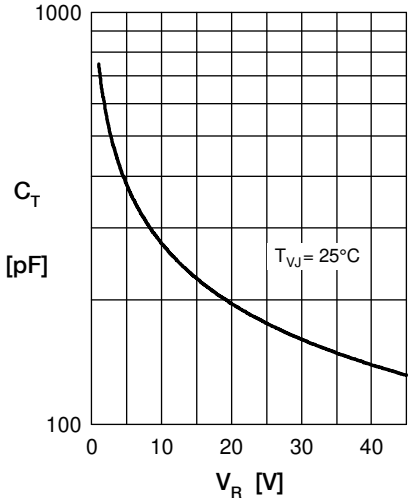

Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

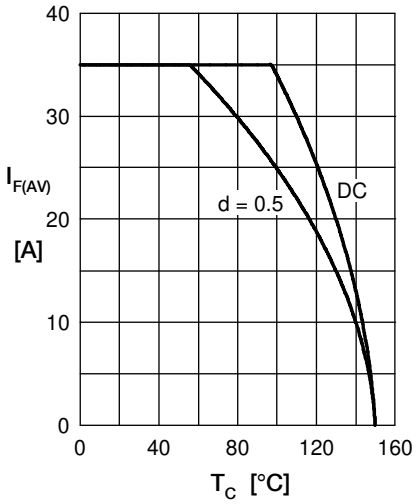

Fig. 4 Average forward current $I_{F(AV)}$ vs. case temp. T_C

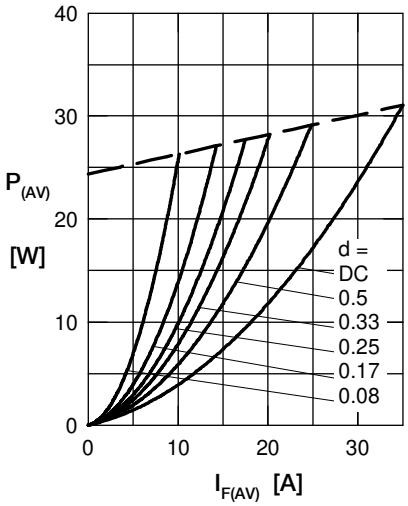

Fig. 5 Forward power loss characteristics

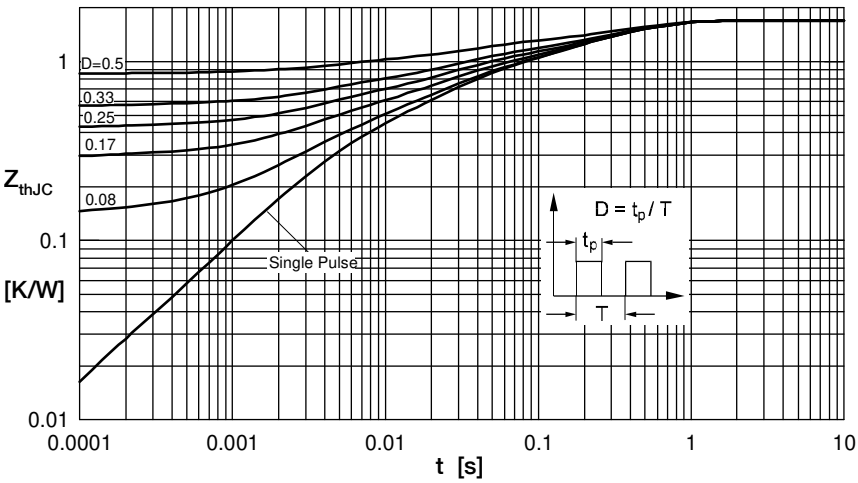

Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode