



Schottky Diode

$$V_{RRM} = 45\text{ V}$$

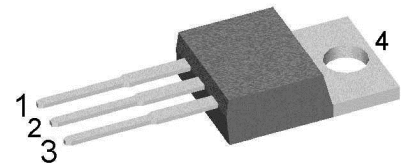
$$I_{FAV} = 2 \times 10\text{ A}$$

$$V_F = 0.46\text{ V}$$

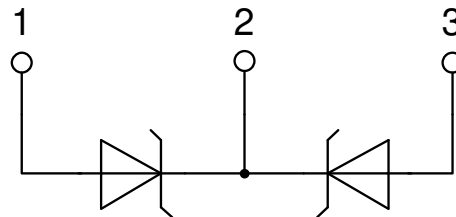
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSSK20-0045B



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

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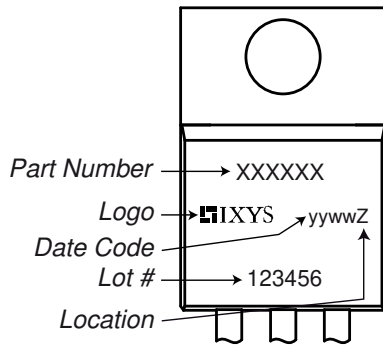


Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					45	V
V_{RRM}	max. repetitive reverse blocking voltage					45	V
I_R	reverse current, drain current	$V_R = 45\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			5	mA
		$V_R = 45\text{ V}$	$T_{VJ} = 100^\circ\text{C}$			50	mA
V_F	forward voltage drop	$I_F = 10\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			0.51	V
		$I_F = 20\text{ A}$				0.67	V
		$I_F = 10\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.46	V
		$I_F = 20\text{ A}$				0.64	V
I_{FAV}	average forward current	$T_C = 135^\circ\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^\circ\text{C}$			10	A
V_{FO}	threshold voltage	} for power loss calculation only				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			$T_C = 25^\circ\text{C}$		75	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^\circ\text{C}$			160	A
C_J	junction capacitance	$V_R = 5\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		497		pF
E_{AS}	non-repetitive avalanche energy	$I_{AS} = 20\text{ A}$ $L = 100\text{ }\mu\text{H}$	$T_{VJ} = 25^\circ\text{C}$			20	mJ
I_{AR}	repetitive avalanche current	$V_A = 1.5 \cdot V_R$ typ. $f = 10\text{ kHz}$				2	A



Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal ¹⁾			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	DSSK20-0045B	DSSK20-0045B	Tube	50	476234

Equivalent Circuits for Simulation

** on die level*

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

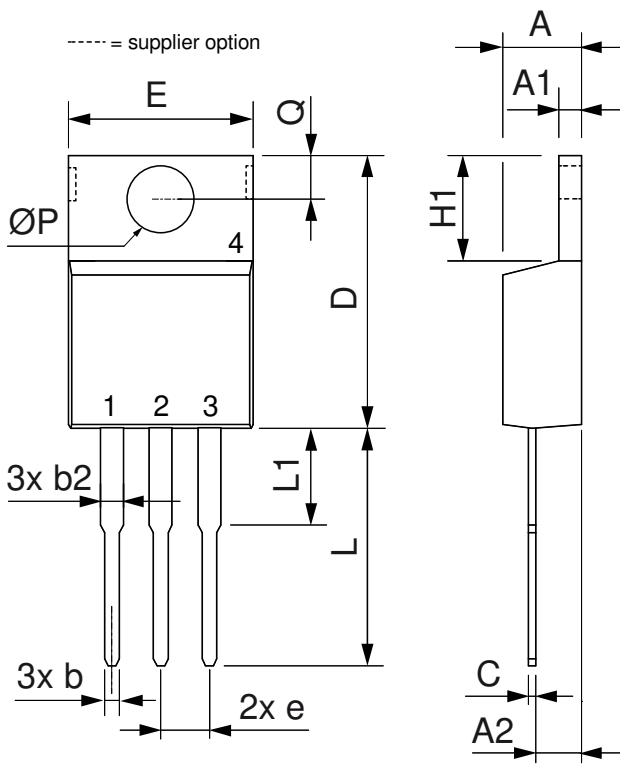


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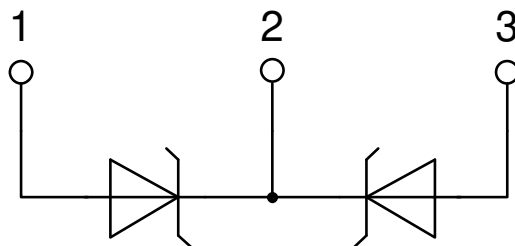
$V_{0\ max}$	threshold voltage	0.27	V
$R_{0\ max}$	slope resistance *	14	mΩ



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	2.54	BSC	0.100	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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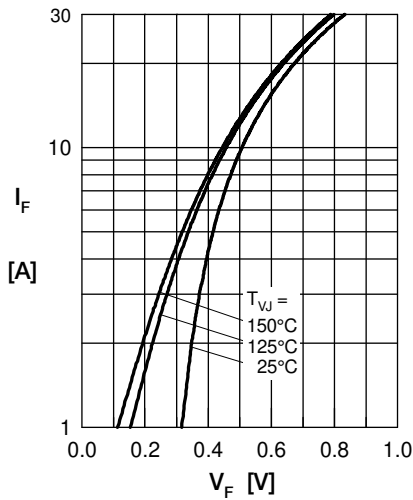


Fig. 1 Max. forward voltage drop characteristics

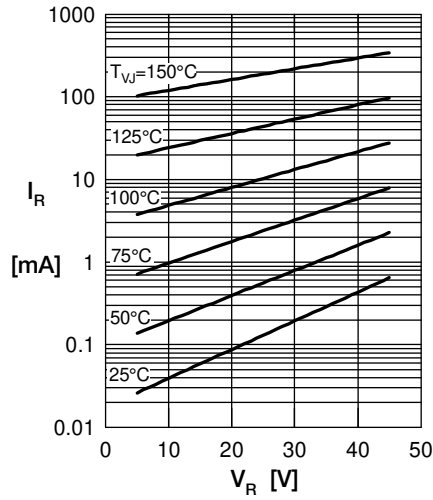


Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

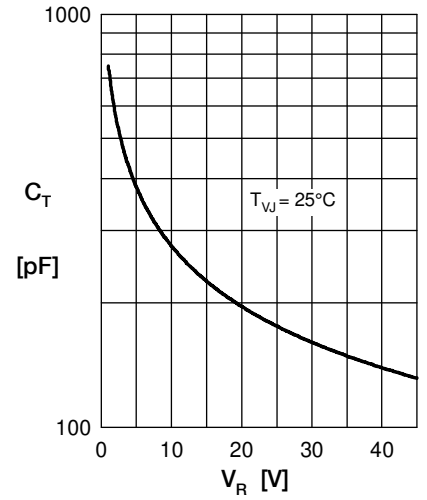


Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

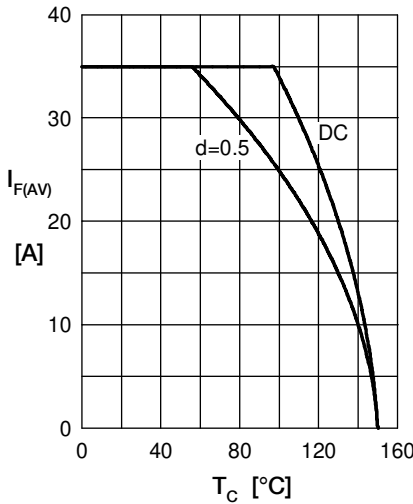


Fig. 4 Average forward current $I_{F(AV)}$ vs. case temp. T_C

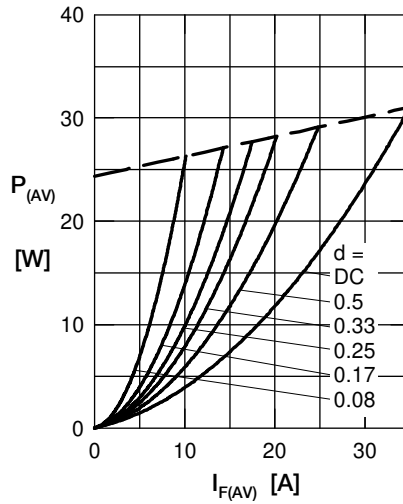


Fig. 5 Forward power loss characteristics

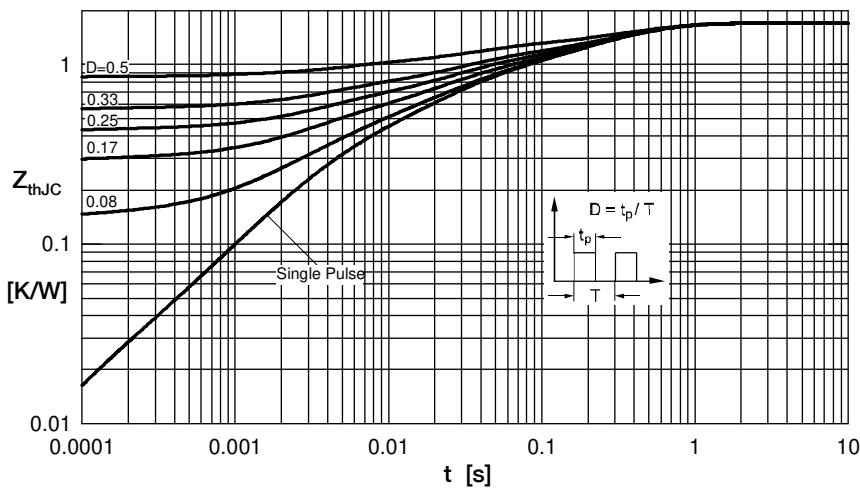


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode