

Schottky Diode

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

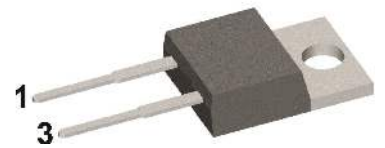
$$I_{FAV} = 25 \text{ A}$$

$$V_F = 0.56 \text{ V}$$

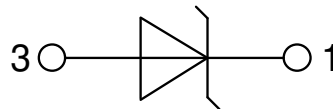
High Performance Schottky Diode
 Low Loss and Soft Recovery
 Single Diode

Part number

DSS25-0045A



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

Disclaimer Notice

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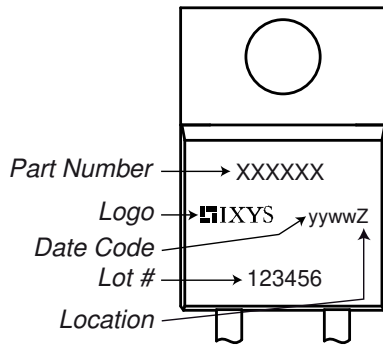


Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					45	V
V_{RRM}	max. repetitive reverse blocking voltage					45	V
I_R	reverse current, drain current	$V_R = 45\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		1	mA
		$V_R = 45\text{ V}$		$T_{VJ} = 125^\circ\text{C}$		10	mA
V_F	forward voltage drop	$I_F = 25\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		0.68	V
		$I_F = 50\text{ A}$				0.81	V
		$I_F = 25\text{ A}$		$T_{VJ} = 125^\circ\text{C}$		0.56	V
		$I_F = 50\text{ A}$				0.71	V
I_{FAV}	average forward current	$T_C = 155^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		25	A
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.36	V
r_F	slope resistance					5.9	mΩ
R_{thJC}	thermal resistance junction to case					1.1	K/W
R_{thCH}	thermal resistance case to heatsink				0.5		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		135	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		400	A
C_J	junction capacitance	$V_R = 5\text{ V}$	$f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$	1.94		nF
E_{AS}	non-repetitive avalanche energy	$I_{AS} = 18\text{ A}$	$L = 180\text{ }\mu\text{H}$	$T_{VJ} = 25^\circ\text{C}$		46	mJ
I_{AR}	repetitive avalanche current	$V_A = 1.5 \cdot V_R$ typ. $f = 10\text{ kHz}$				1.8	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		175	°C
T_{op}	operation temperature		-55		150	°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

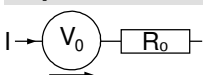


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSS25-0045A	DSS25-0045A	Tube	50	472433

Equivalent Circuits for Simulation

** on die level*

$T_{VJ} = 175^{\circ}C$

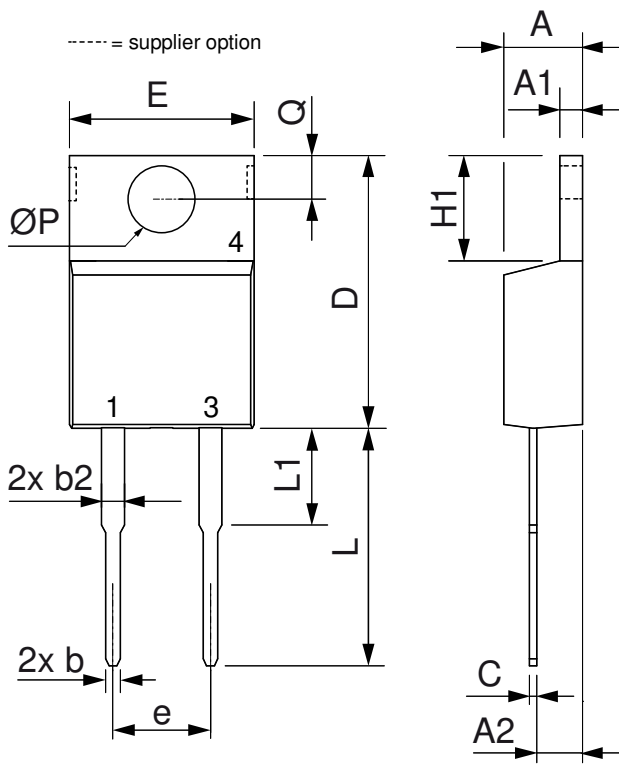


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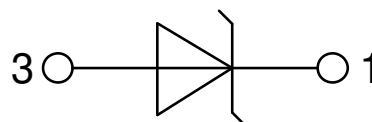
$V_{0\ max}$	threshold voltage	0.36	V
$R_{0\ max}$	slope resistance *	2.7	mΩ



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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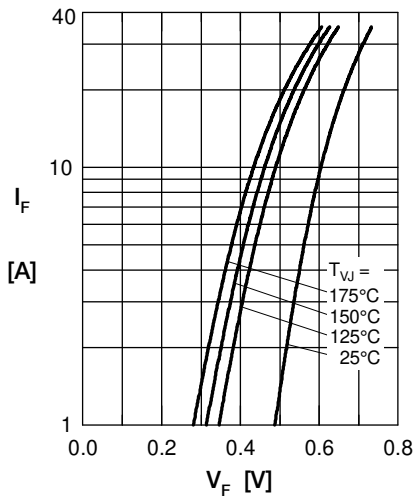


Fig. 1 Maximum forward voltage drop characteristics

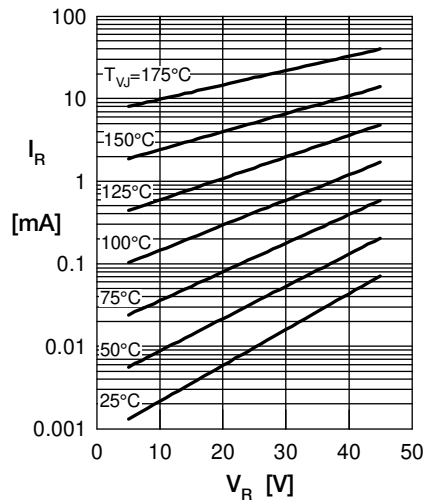


Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

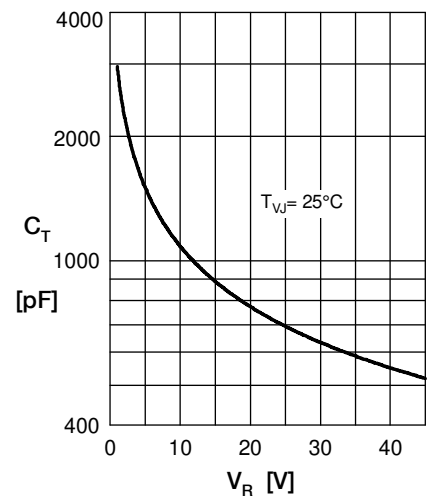


Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

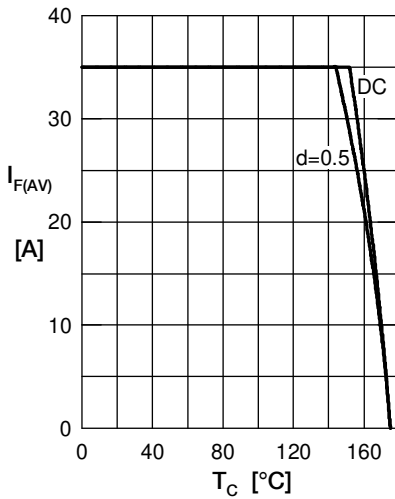


Fig. 4 Average forward current $I_{F(AV)}$ vs. case temp. T_C

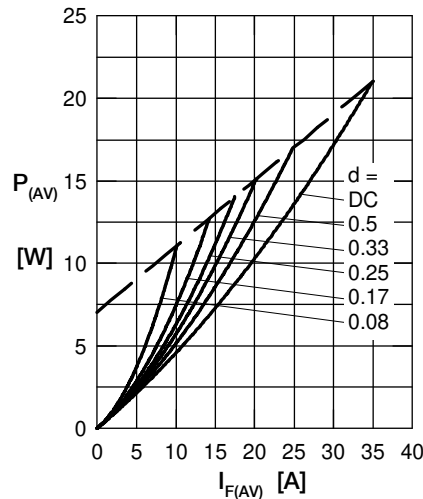


Fig. 5 Forward power loss characteristics

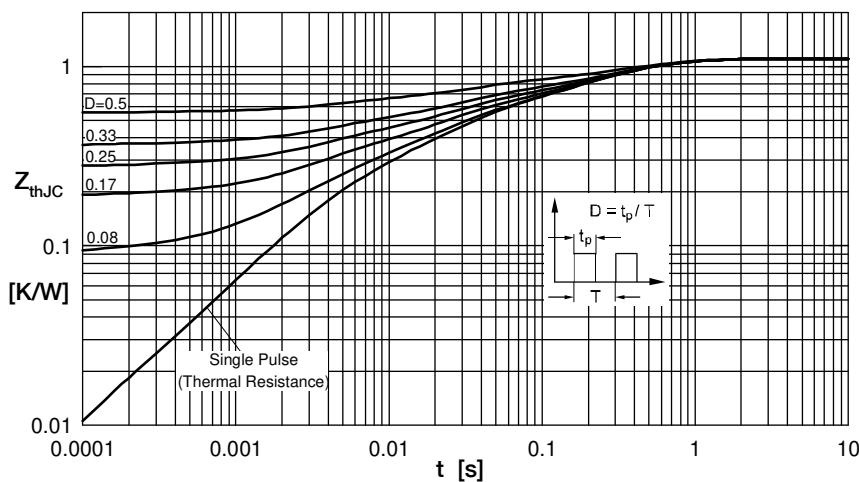


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode