

# Schottky Diode

$$V_{RRM} = 25\text{ V}$$

$$I_{FAV} = 2 \times 40\text{ A}$$

$$V_F = 0.39\text{ V}$$

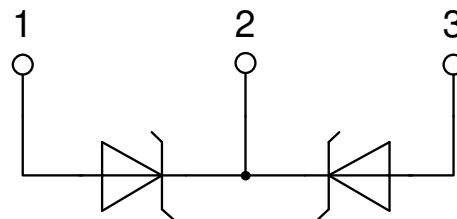
High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DSSK80-0025B**



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-247

- 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					25	V
$V_{RRM}$	max. repetitive reverse blocking voltage					25	V
$I_R$	reverse current, drain current	$V_R = 25\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			40	mA
		$V_R = 25\text{ V}$	$T_{VJ} = 100^\circ\text{C}$			250	mA
$V_F$	forward voltage drop	$I_F = 40\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			0.48	V
		$I_F = 80\text{ A}$				0.62	V
		$I_F = 40\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.39	V
		$I_F = 80\text{ A}$				0.57	V
$I_{FAV}$	average forward current	$T_C = 130^\circ\text{C}$ rectangular	$T_{VJ} = 150^\circ\text{C}$ d = 0.5			40	A
$V_{F0}$	threshold voltage	} for power loss calculation only				0.18	V
$r_F$	slope resistance					4.6	mΩ
$R_{thJC}$	thermal resistance junction to case					0.8	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.25		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		155	W
$I_{FSM}$	max. forward surge current	t = 10 ms; (50 Hz), sine; $V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		600	A
$C_J$	junction capacitance	$V_R = 5\text{ V}$ f = 1 MHz		$T_{VJ} = 25^\circ\text{C}$		3.77	nF



Package TO-247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			70	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>				6		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

**Product Marking**



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSSK80-0025B	DSSK80-0025B	Tube	30	481173

Similar Part	Package	Voltage class
DSSK80-003B	TO-247AD (3)	30

**Equivalent Circuits for Simulation**

*\* on die level*

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



**Schottky**

$V_{0 \max}$	threshold voltage	0.18	V
$R_{0 \max}$	slope resistance *	2.1	mΩ



**Outlines TO-247**



Sym.	Inches		Millimeter	
	min.	max.	min.	max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39



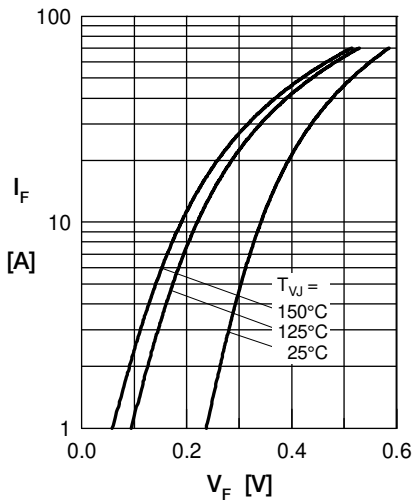
**Schottky**


Fig. 1 Max. forward voltage drop characteristics

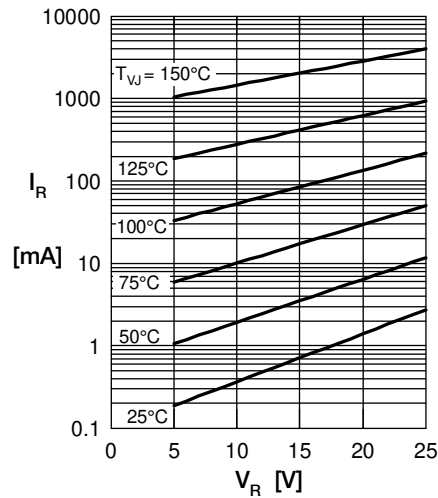
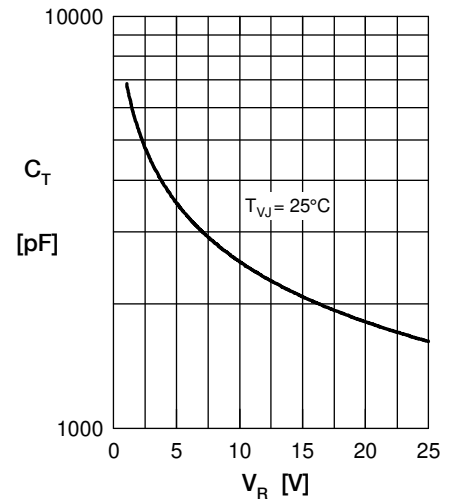
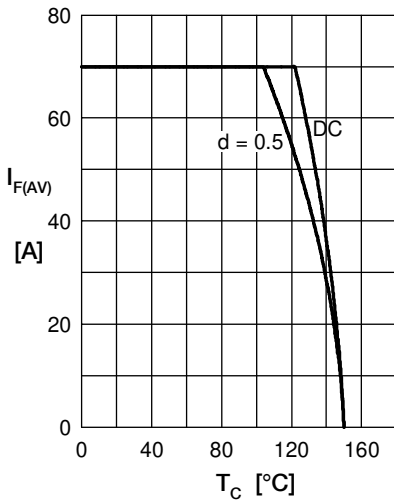
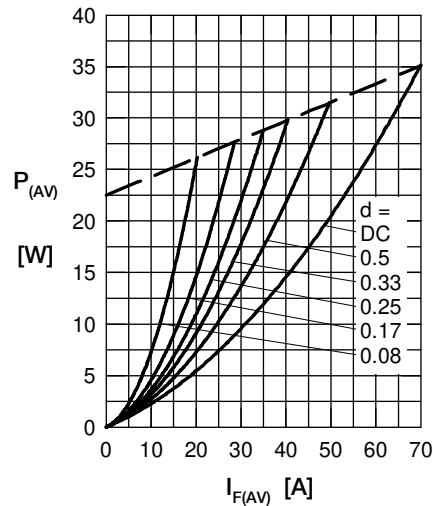

 Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$ 

 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

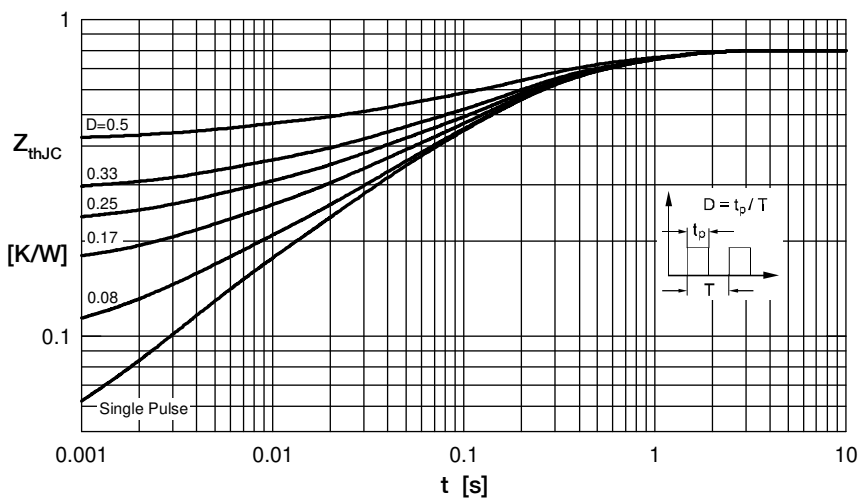


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode