

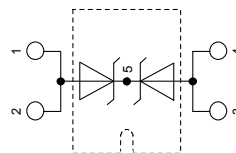
HiPerFRED

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSEC240-06A

$$\begin{aligned} V_{RRM} &= 600 \text{ V} \\ I_{FAV} &= 2 \times 120 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$



Backside: cathode

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package:

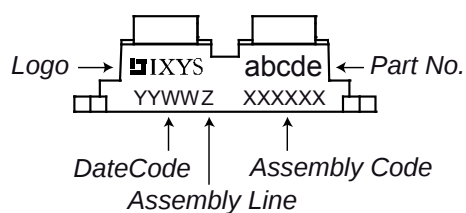
- Housing: SOT-227UI (minibloc)
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			600	V
I_R	reverse current	$V_R = 600 \text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$			2	mA
		$V_R = 600 \text{ V}$ $T_{VJ} = 150^{\circ}\text{C}$			8	mA
V_F	forward voltage	$I_F = 120 \text{ A}$ $T_{VJ} = 25^{\circ}\text{C}$			1.91	V
		$I_F = 240 \text{ A}$			2.16	V
		$I_F = 120 \text{ A}$ $T_{VJ} = 150^{\circ}\text{C}$			1.26	V
		$I_F = 240 \text{ A}$			1.51	V
I_{FAV}	average forward current	rectangular $d = 0.5$ $T_C = 110^{\circ}\text{C}$			120	A
V_{F0}	threshold voltage	$T_{VJ} = 150^{\circ}\text{C}$ for power loss calculation only			1.03	V
r_F	slope resistance				1.9	mΩ
R_{thJC}	thermal resistance junction to case				0.20	K/W
T_{VJ}	virtual junction temperature		-55		150	$^{\circ}\text{C}$
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			620	W
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}$ (50 Hz), sine $T_{VJ} = 45^{\circ}\text{C}$			2000	A
I_{RM}	max. reverse recovery current	$T_{VJ} = 25^{\circ}\text{C}$		tbd		A
		$I_F = 120 \text{ A}; V_R = 300 \text{ V}$ $T_{VJ} = 100^{\circ}\text{C}$		tbd		A
t_{rr}	reverse recovery time	$-di_F/dt = 600 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^{\circ}\text{C}$		tbd		ns
		$T_{VJ} = 100^{\circ}\text{C}$		tbd		ns
C_J	junction capacitance	$V_R = 400 \text{ V}; f = 1 \text{ MHz}$ $T_{VJ} = 25^{\circ}\text{C}$		214		pF

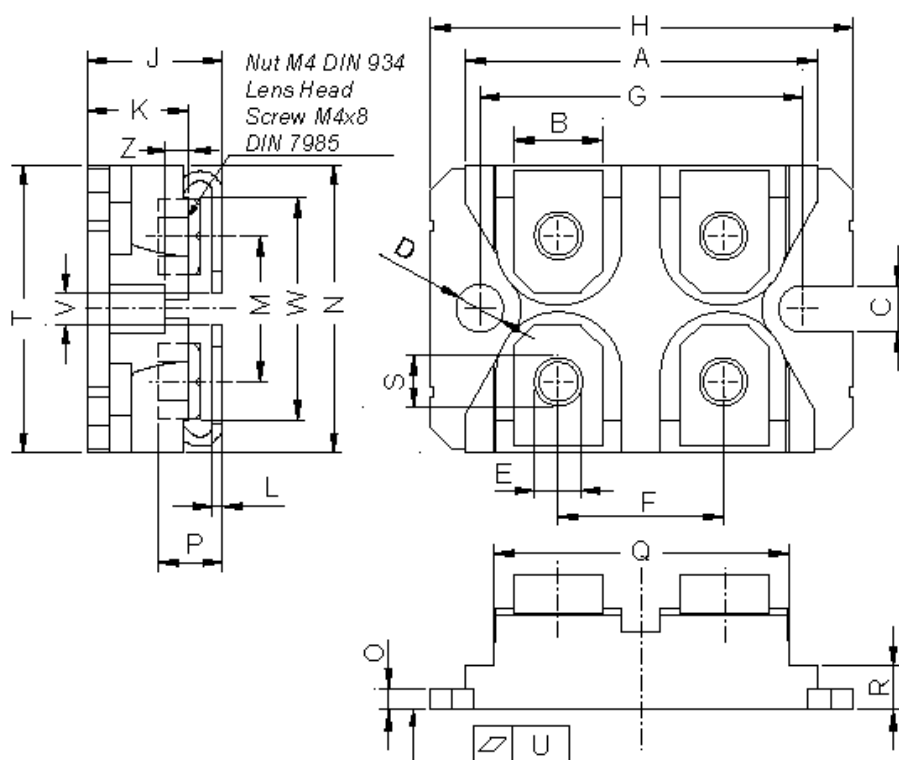
Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			200	A
R_{thCH}	thermal resistance case to heatsink			0.10		K/W
T_{stg}	storage temperature		-40		150	°C
Weight				30		g
M_D	mounting torque		1.1		1.5	Nm
M_T	terminal torque		1.1		1.5	Nm

Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEC240-06A	DSEC240-06A	Tube	10	485357

Outlines SOT-227UI (minibloc)



Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

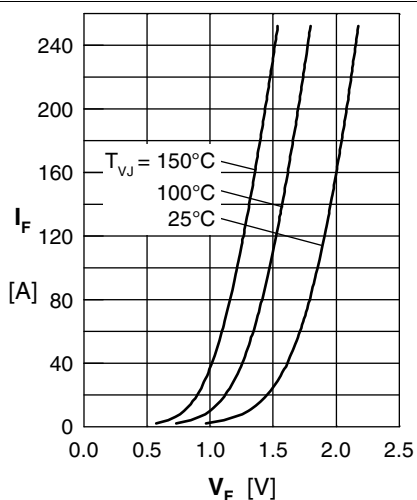


Fig. 1 Forward current I_F vs. V_F

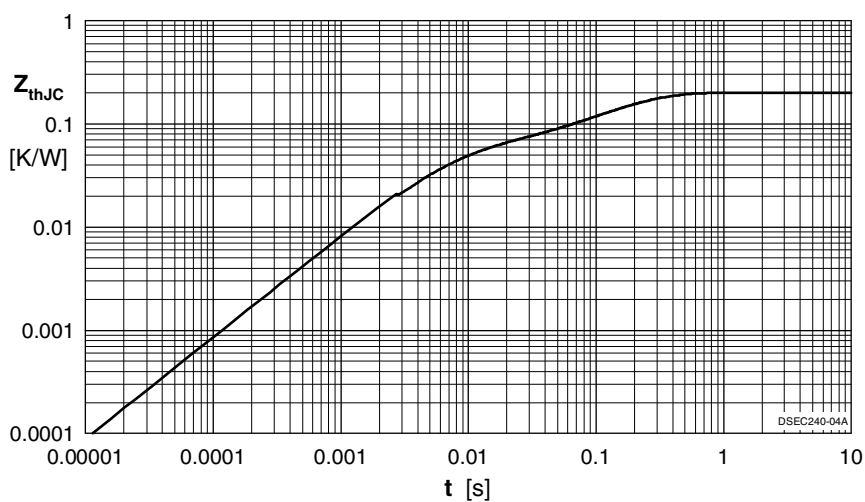


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.064	0.113
2	0.137	1.105