

FRED

$$V_{RRM} = 600\text{ V}$$

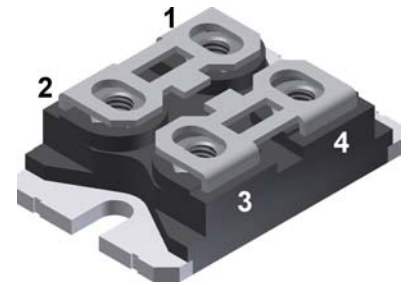
$$I_{FAV} = 2 \times 150\text{ A}$$

$$t_{rr} = 35\text{ ns}$$

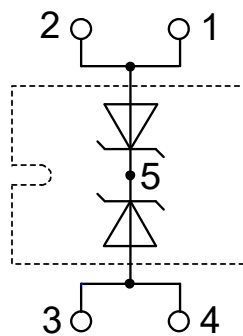
Fast Recovery Epitaxial Diode
 Extreme Low Loss and Soft Recovery
 Common Cathode

Part number

DSEK300-06A



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: SOT-227UI (minibloc)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice

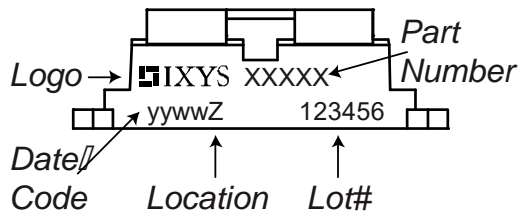
Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					600	V
V_{RRM}	max. repetitive reverse blocking voltage					600	V
I_R	reverse current, drain current	$V_R = 600\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		3	mA
		$V_R = 480\text{ V}$		$T_{VJ} = 150^\circ\text{C}$		30	mA
V_F	forward voltage drop	$I_F = 150\text{ A}$		$T_{VJ} = 25^\circ\text{C}$		1,17	V
							1,40
		$I_F = 300\text{ A}$		$T_{VJ} = 150^\circ\text{C}$		1,02	V
							1,36
I_{FAV}	average forward current	$T_c = 110^\circ\text{C}$ rectangular	$d = 0.5$	$T_{VJ} = 150^\circ\text{C}$		150	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^\circ\text{C}$		0,74	V
r_F	slope resistance					1,25	mΩ
R_{thJC}	thermal resistance junction to case					0,2	K/W
R_{thCH}	thermal resistance case to heatsink				0,1		K/W
P_{tot}	total power dissipation			$T_c = 25^\circ\text{C}$		625	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$		2,00	kA
C_J	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^\circ\text{C}$		214	pF
I_{RM}	max. reverse recovery current	} $I_F = 150\text{ A}; V_R = 300\text{ V}$		$T_{VJ} = 25^\circ\text{C}$		25	A
				$T_{VJ} = 125^\circ\text{C}$		50	A
t_{rr}	reverse recovery time	} $-di_F/dt = 600\text{ A}/\mu\text{s}$		$T_{VJ} = 25^\circ\text{C}$		60	ns
				$T_{VJ} = 125^\circ\text{C}$		180	ns



Package SOT-227UI (minibloc)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			200	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
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

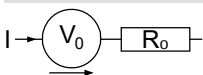


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEK300-06A	DSEK300-06A	Tube	10	517508

Equivalent Circuits for Simulation

* on die level

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

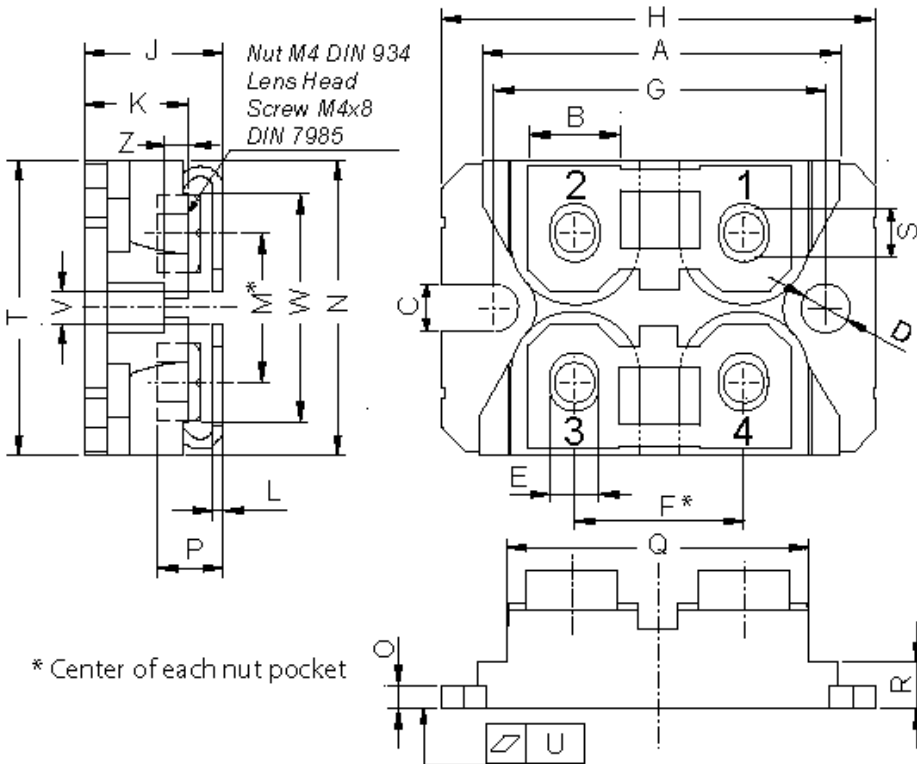


Fast Diode

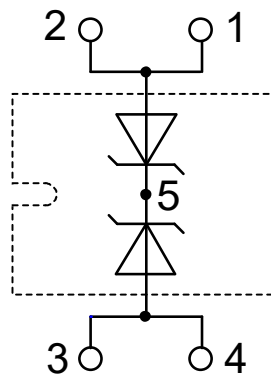
$V_{0\ max}$	threshold voltage	0,74	V
$R_{0\ max}$	slope resistance *	0,75	mΩ



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	11.88	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



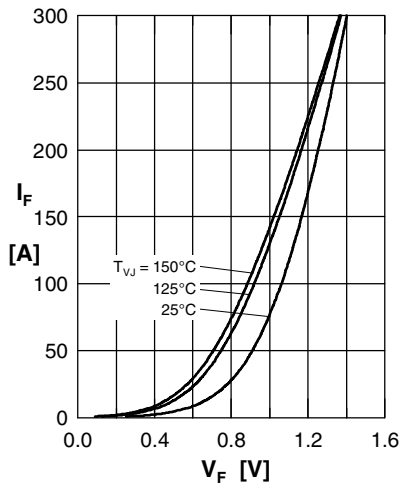
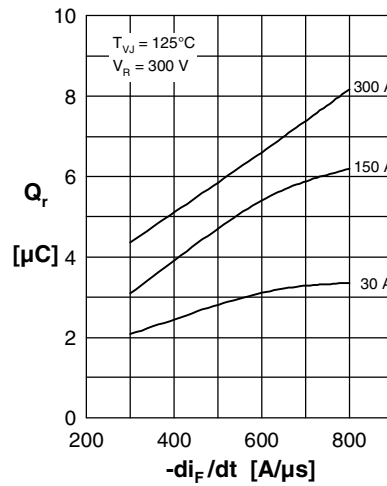
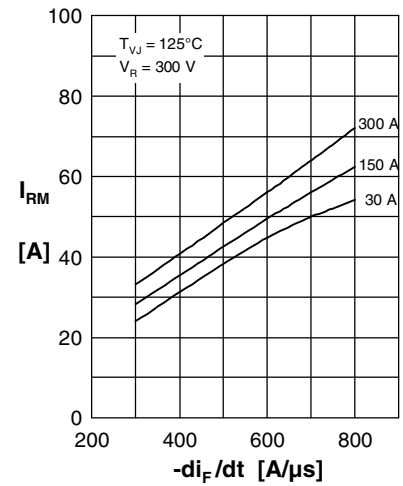
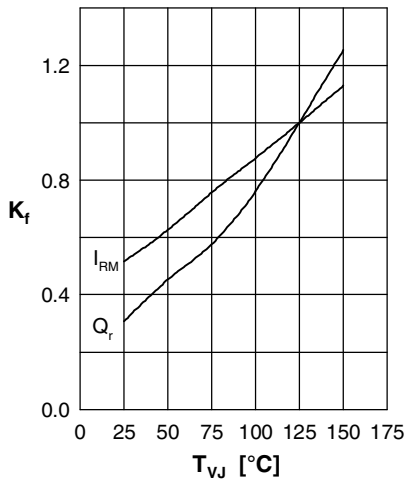
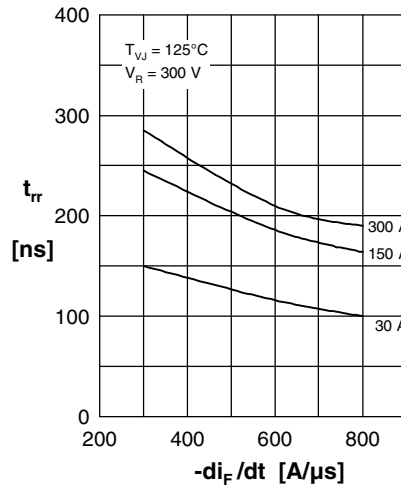
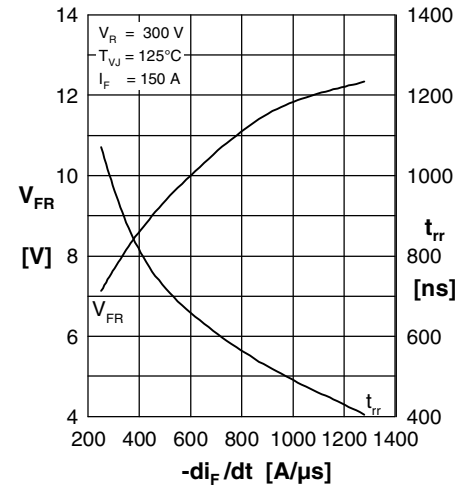
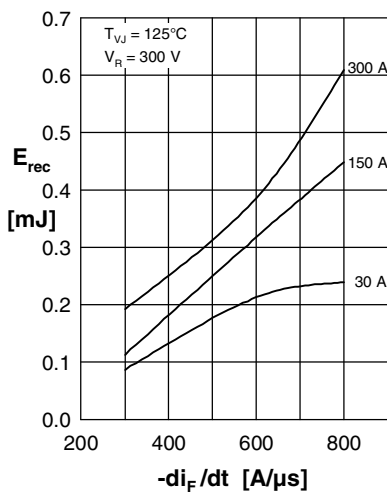
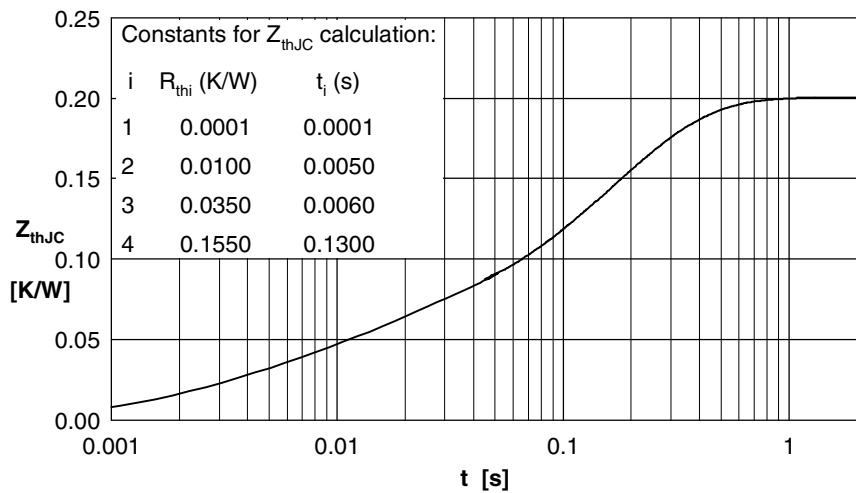
Fast Diode

 Fig. 1 Forward current I_F versus V_F

 Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

 Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

 Fig. 4 Typ. dynamic parameters Q_r , I_{RM} versus T_{VJ}

 Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

 Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus $-di_F/dt$

 Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$


Fig. 8 Transient thermal resistance junction to case