

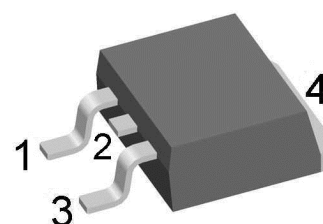
FRED

V_{RRM}	=	600 V
I_{FAV}	=	30 A
t_{rr}	=	35 ns

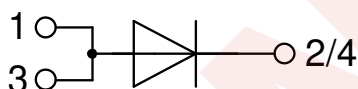
Fast Recovery Epitaxial Diode Single Diode

Part number

DSEI36-06AS



Backside: cathode



Features / Advantages:

- Planar passivated chips
- 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: TO-263 (D2Pak)

- 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.

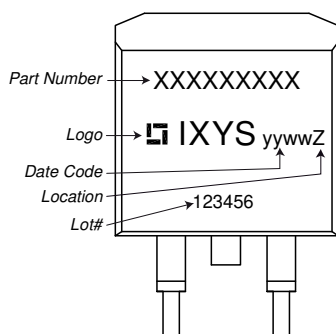


Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				600	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				600	V
I_R	reverse current, drain current	$V_R = 600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			100	μA
		$V_R = 480\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$			7	mA
V_F	forward voltage drop	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.54	V
		$I_F = 60\text{ A}$				1.74	V
		$I_F = 30\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			1.38	V
		$I_F = 60\text{ A}$				1.67	V
I_{FAV}	average forward current	$T_C = 110^{\circ}\text{C}$ rectangular	$T_{VJ} = 150^{\circ}\text{C}$ d = 0.5			30	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		1.10	V
r_F	slope resistance					9.1	m Ω
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; $V_R = 0\text{ V}$		$T_{VJ} = 45^{\circ}\text{C}$		300	A
C_J	junction capacitance	$V_R = 600\text{ V}$ f = 1 MHz		$T_{VJ} = 25^{\circ}\text{C}$	22		pF
I_{RM}	max. reverse recovery current	} $I_F = 37\text{ A}; V_R = 350\text{ V}$ -di _F /dt = 200 A/ μs		$T_{VJ} = 25^{\circ}\text{C}$	5.5		A
				$T_{VJ} = 100^{\circ}\text{C}$	9		A
t_{rr}	reverse recovery time			$T_{VJ} = 25^{\circ}\text{C}$	80		ns
				$T_{VJ} = 100^{\circ}\text{C}$	150		ns

Package TO-263 (D2Pak)				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
I_{RMS}	RMS current	per terminal ¹⁾			35	A	
T_{VJ}	virtual junction temperature		-40		150	°C	
T_{op}	operation temperature		-40		125	°C	
T_{stg}	storage temperature		-40		150	°C	
Weight					1.5	g	
F_c	mounting force with clip		20		60	N	

¹⁾ I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking

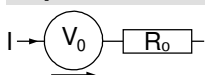


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEI36-06AS-TRL	DSEI36-06AS-TRL	Tape & Reel	800	500059
Alternative	DSEI36-06AS-TUB	DSEI36-06AS	Tube	50	469114

Equivalent Circuits for Simulation

* on die level

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



Fast Diode

$V_{0\max}$ threshold voltage

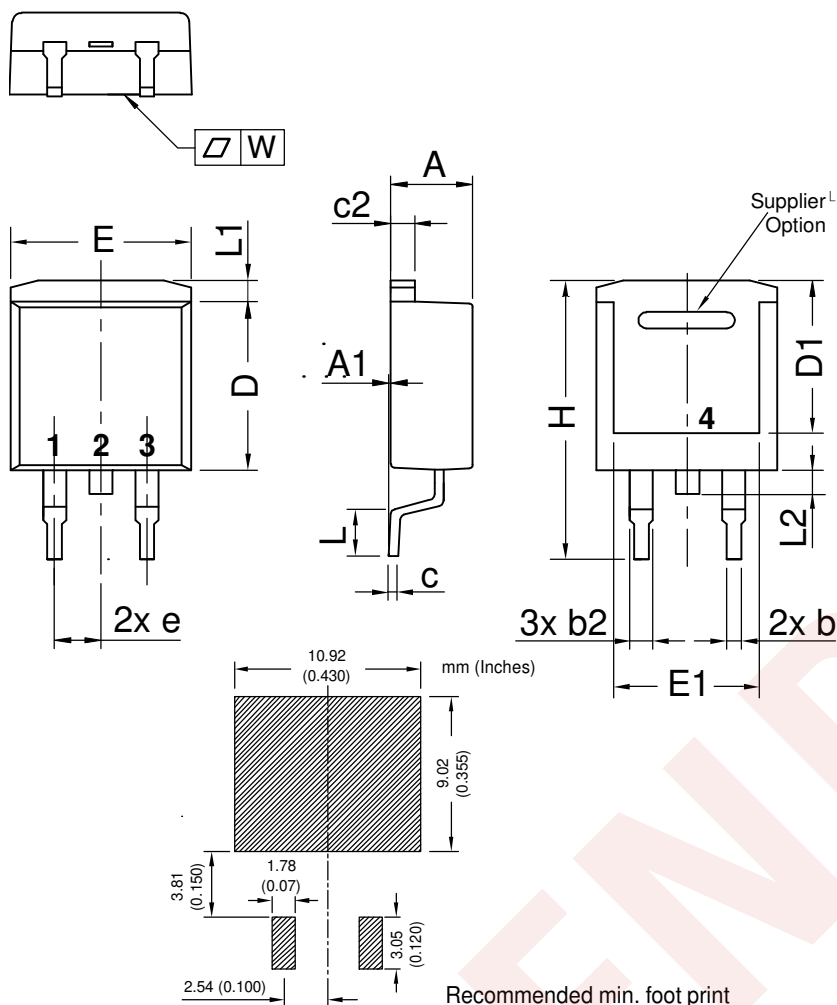
1.1

V

$R_{0\max}$ slope resistance *

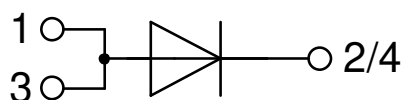
6

mΩ

Outlines TO-263 (D2Pak)


Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2.54 BSC		0.100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

All dimensions conform with and/or within JEDEC standard.



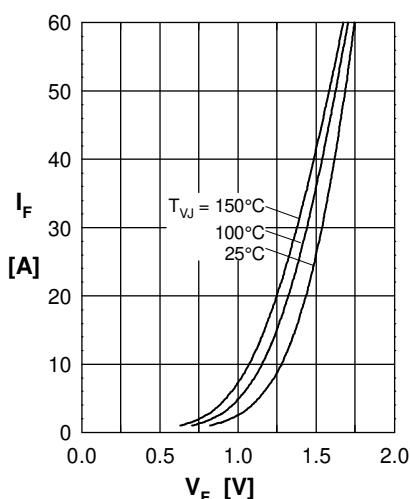
Fast Diode


Fig. 1 Forward current versus max. forward voltage drop

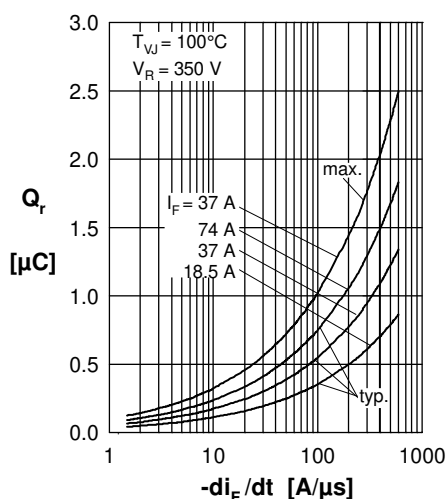


Fig. 2 Recovery charge versus $-di_F/dt$

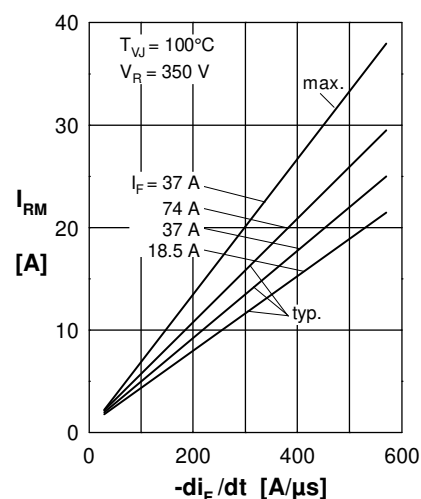


Fig. 3 Peak reverse current versus $-di_F/dt$

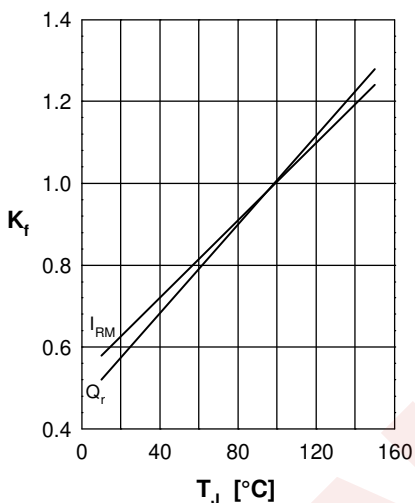


Fig. 4 Dynamic parameters vs. junction temperature

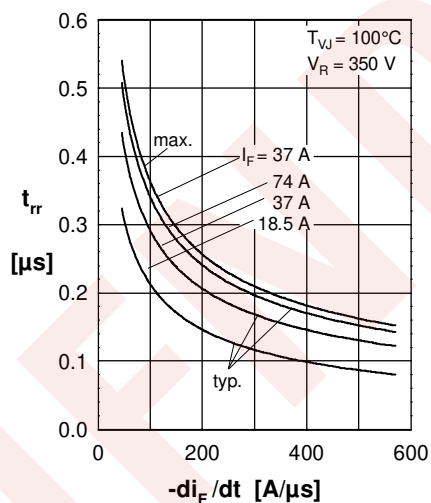


Fig. 5 Recovery time versus $-di_F/dt$

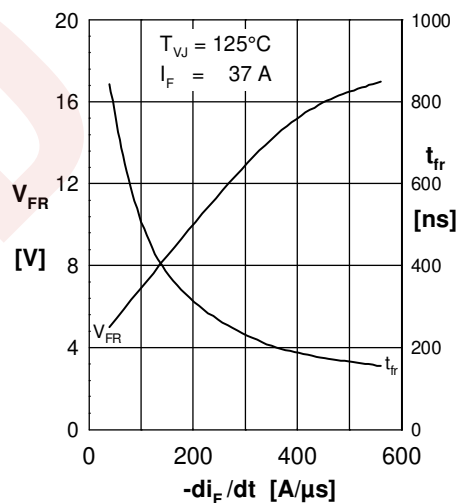


Fig. 6 Peak forward voltage versus $-di_F/dt$

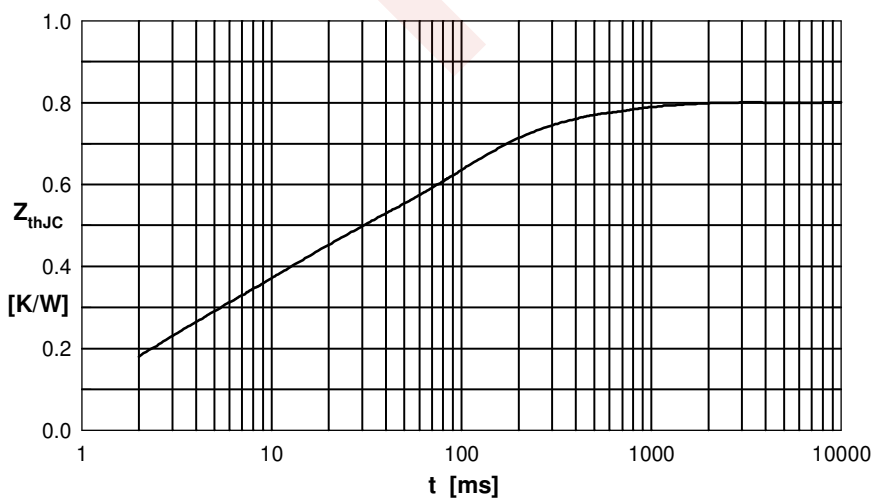


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.200	0.0018
2	0.220	0.0100
3	0.080	0.5000
4	0.300	0.0900