

FRED

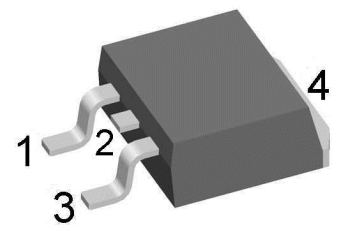
$$\begin{aligned} V_{RRM} &= 600 \text{ V} \\ I_{FAV} &= 25 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$

Fast Recovery Epitaxial Diode Single Diode

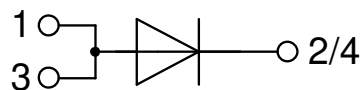
Part number

DSEI25-06AS

Marking on Product: DSEI25-06AS



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

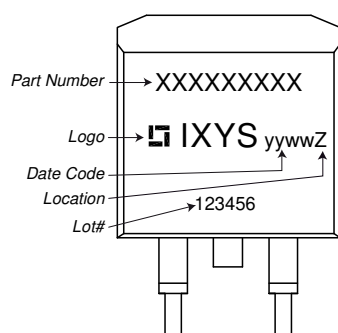
Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice 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°C				600	V	
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				600	V	
I _R	reverse current, drain current	V _R = 600 V	T _{VJ} = 25°C			100	μA	
		V _R = 480 V	T _{VJ} = 125°C			6	mA	
V _F	forward voltage drop	I _F = 25 A	T _{VJ} = 25°C			1.51	V	
		I _F = 50 A				1.73	V	
		I _F = 25 A	T _{VJ} = 150°C			1.37	V	
		I _F = 50 A				1.66	V	
I _{FAV}	average forward current	T _C = 100°C rectangular d = 0.5	T _{VJ} = 150°C			25	A	
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 150°C		1.10	V	
r _F	slope resistance					10.6	mΩ	
R _{thJC}	thermal resistance junction to case					1.2	K/W	
R _{thCH}	thermal resistance case to heatsink				0.50		K/W	
P _{tot}	total power dissipation	T _C = 25°C				105	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		240	A	
C _J	junction capacitance	V _R = 400 V f = 1 MHz		T _{VJ} = 25°C	20		pF	
I _{RM}	max. reverse recovery current	} I _F = 30 A; V _R = 300 V -di _F /dt = 200 A/μs		T _{VJ} = 25 °C	9		A	
				T _{VJ} = 125 °C	14		A	
t _{rr}	reverse recovery time			T _{VJ} = 25 °C	50		ns	
				T _{VJ} = 125 °C	120		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



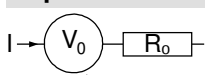
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEI25-06AS-TRL	DSEI25-06AS	Tape & Reel	800	520750
Alternative	DSEI25-06AS-TUB	DSEI25-06AS	Tube	50	525170

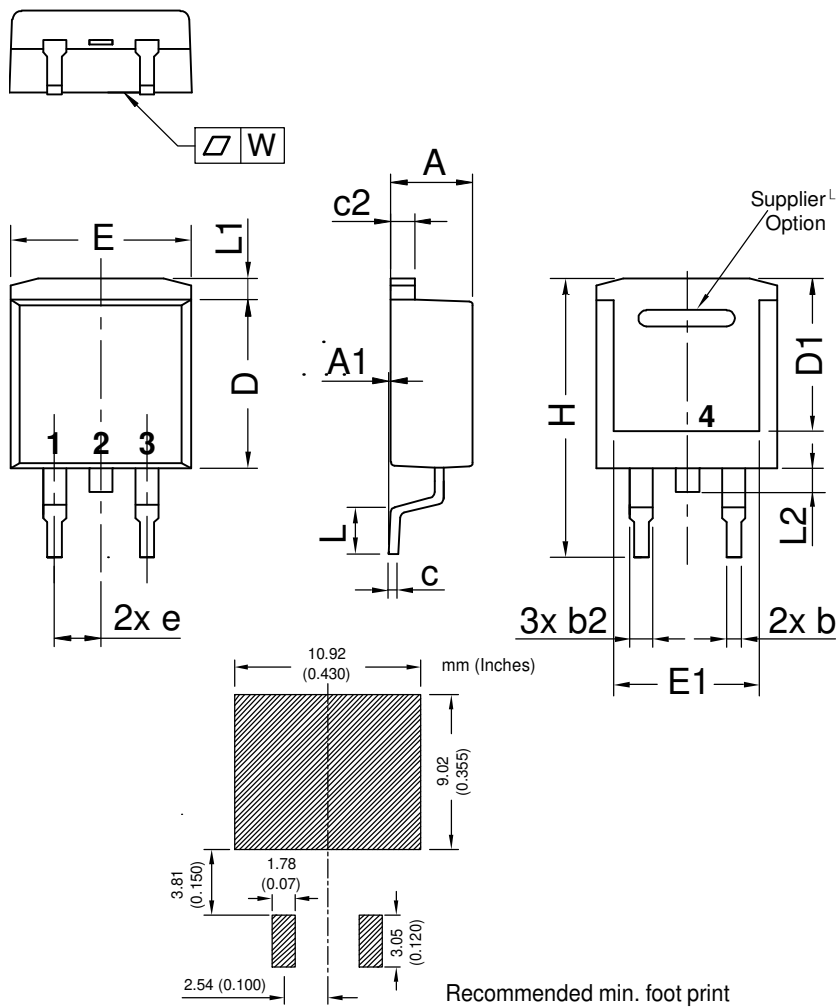
Similar Part	Package	Voltage class
DSEI25-06A	TO-220AC (2)	600
DFE25I600HA	TO-247AD (2)	600

Equivalent Circuits for Simulation

* on die level

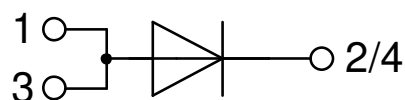
$T_{VJ} = 150^{\circ}\text{C}$

		Fast Diode	
$V_{0\max}$	threshold voltage	1.1	V
$R_{0\max}$	slope resistance *	7.5	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.



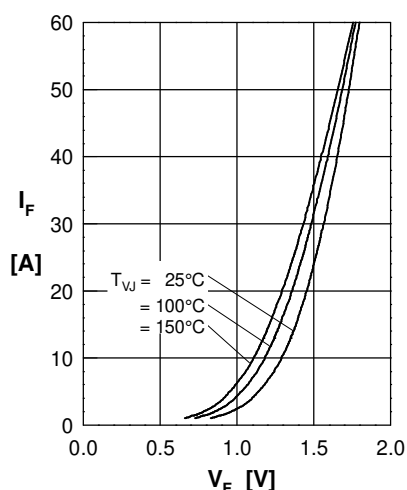
Fast Diode


Fig. 1 Forward current I_F versus max. forward voltage drop V_F

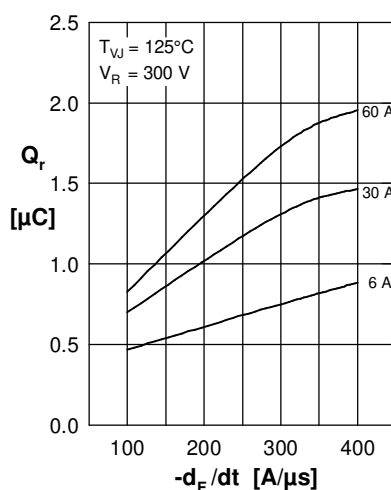


Fig. 2 Typ. reverse recov. charge Q_r versus $-d_F/dt$

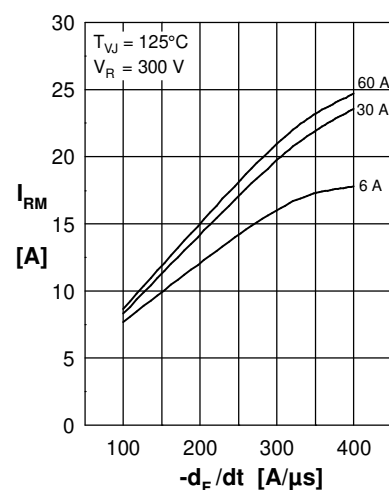


Fig. 3 Typ. peak reverse current I_{RM} versus $-d_F/dt$

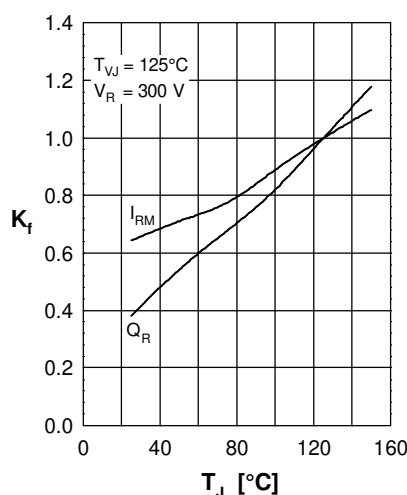


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

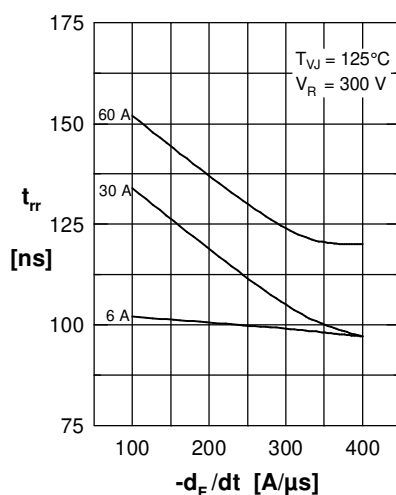


Fig. 5 Typ. recovery time t_{rr} versus $-d_F/dt$

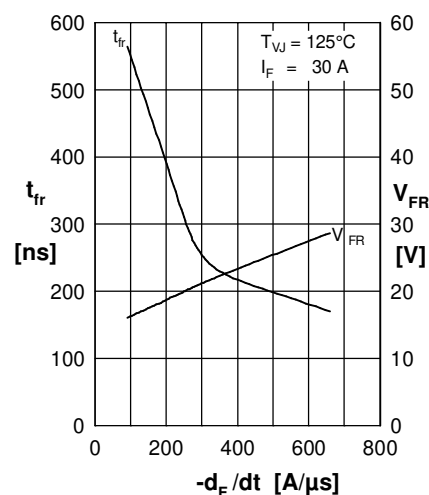


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus d_F/dt

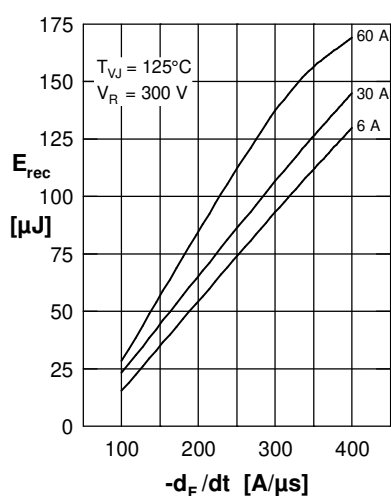


Fig. 7 Recovery energy E_{rec} versus $-d_F/dt$

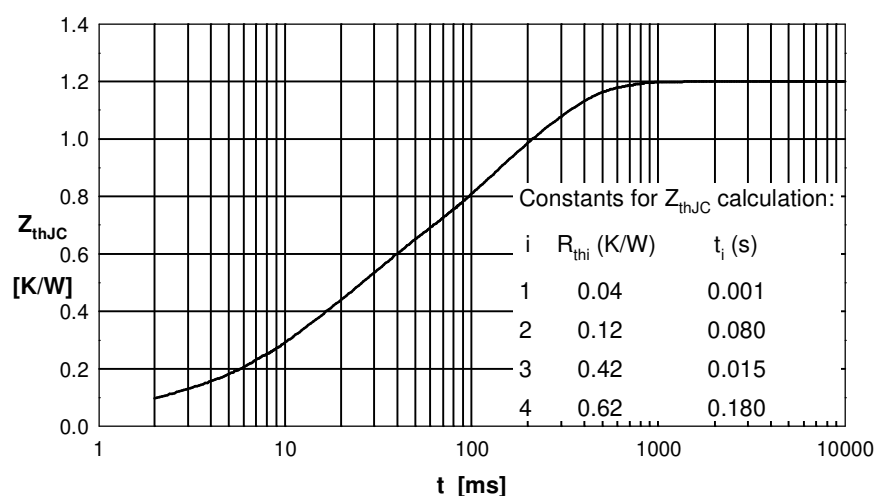


Fig. 8 Transient thermal impedance junction to case