

FRED

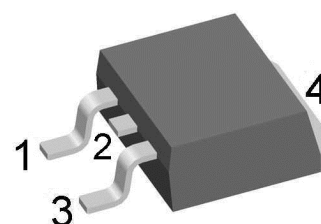
V_{RRM}	=	600 V
I_{FAV}	=	25 A
t_{rr}	=	35 ns

Fast Recovery Epitaxial Diode Single Diode

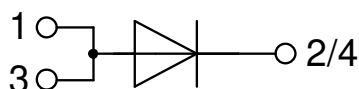
Part number

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

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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



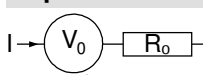
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEI25-06AS-TRL	DSEI25-06AS	Tape & Reel	800	520750
Alternative	DSEI25-06AS-TUB	DSEI25-06AS	Tube	50	525170

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

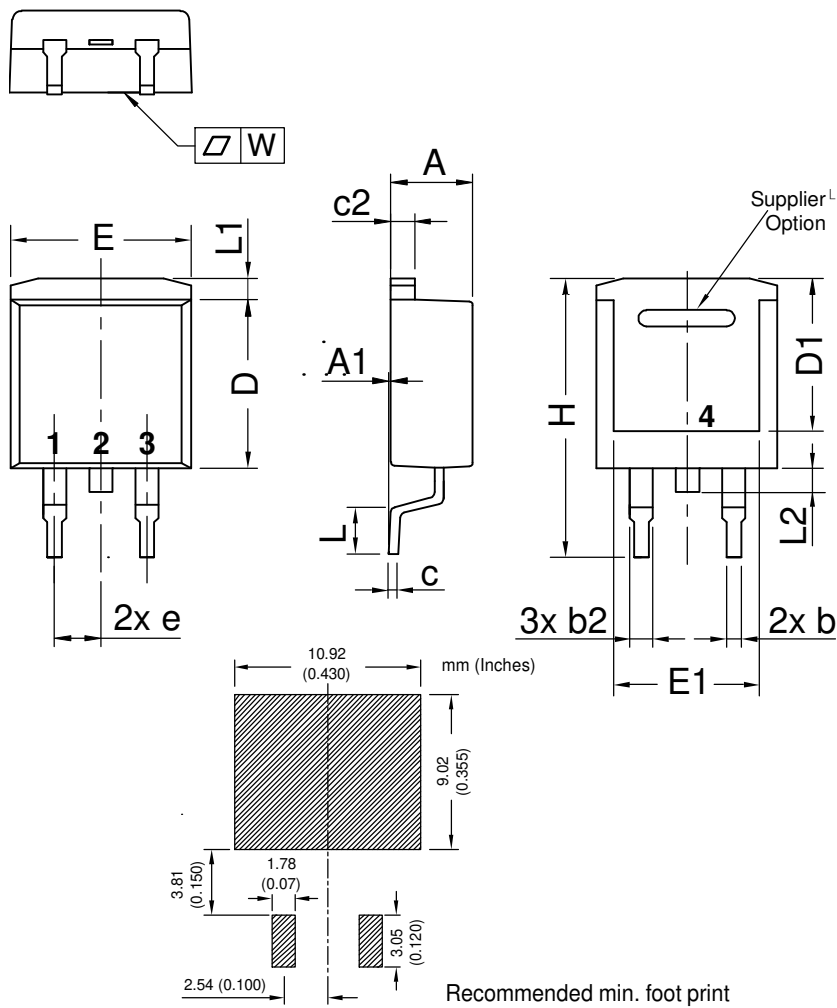
1.1

V

$R_{0\max}$ slope resistance *

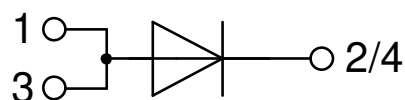
7.5

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.



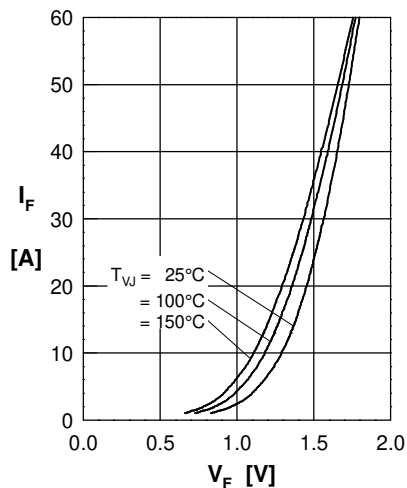
Fast Diode


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

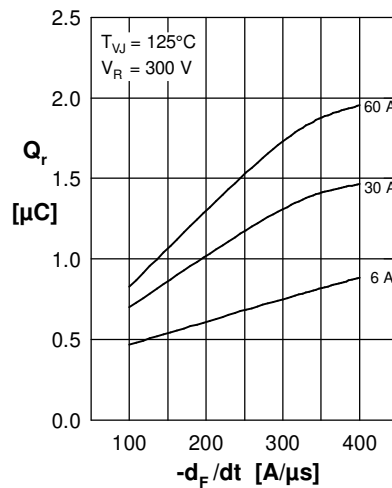


Fig. 2 Typ. reverse recov. charge Q_r versus $-d_F/dt$

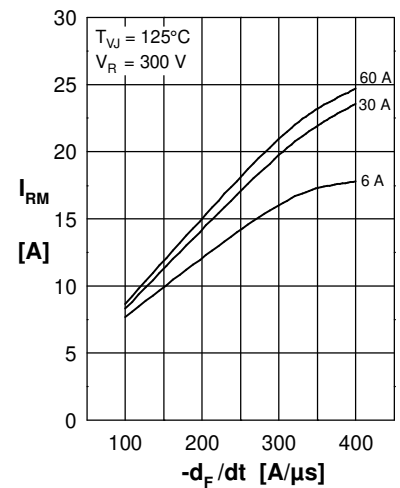


Fig. 3 Typ. peak reverse current I_{RM} versus $-d_F/dt$

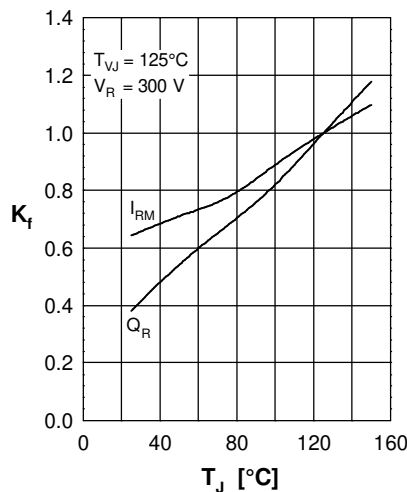


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

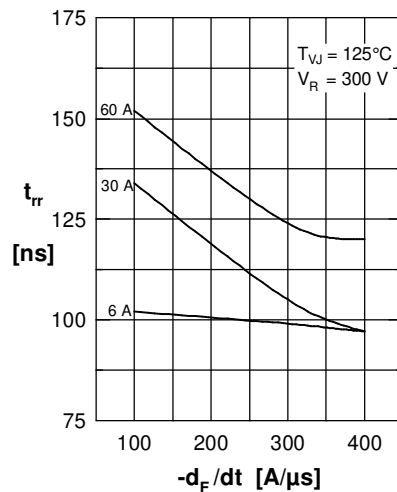


Fig. 5 Typ. recovery time t_{rr} versus $-d_F/dt$

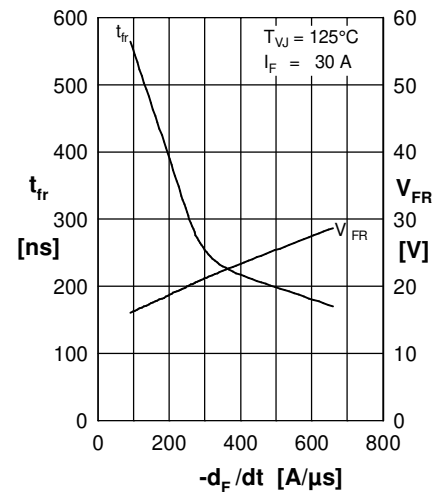


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus d_F/dt

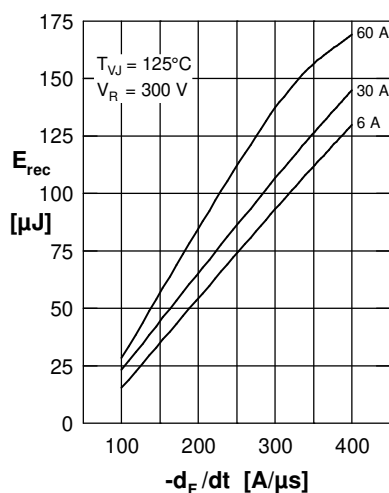


Fig. 7 Recovery energy versus $-d_F/dt$

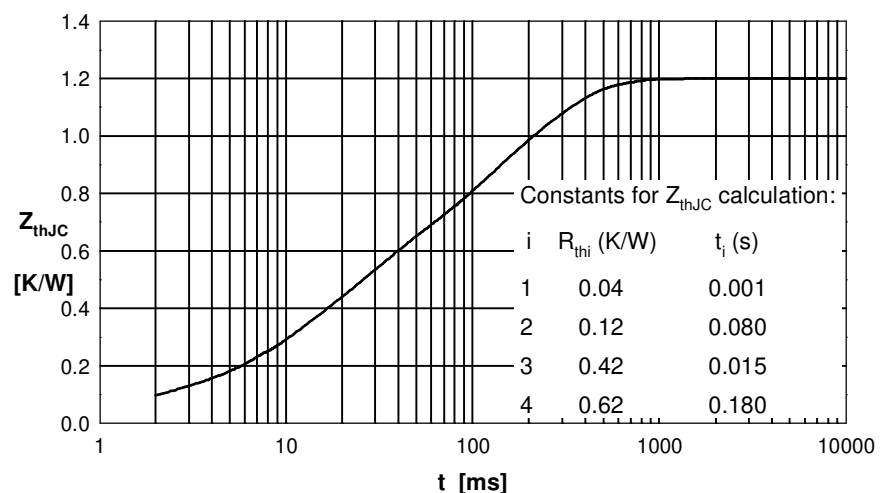


Fig. 8 Transient thermal impedance junction to case