preliminary

HiPerFRED

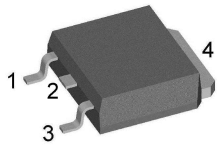
V_{RRM}	=	600 V
I_{FAV}	=	6 A
t_{rr}	=	15 ns

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

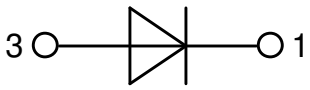
Part number

DSEP6-06BS

Marking on Product: P6QGUI



Backside: cathode



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm 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-252 (DPak)

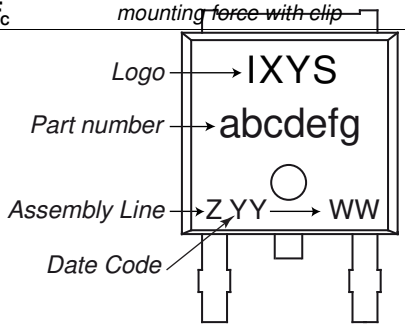
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Fast Diode

Symbol	Definition	Conditions		Ratings 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			50	µA
		V_R = 600 V	T_{VJ} = 150°C			0.2	mA
V_F	*forward voltage drop*	I_F = 6 A	T_{VJ} = 25°C			2.66	V
		I_F = 12 A				3.30	V
		I_F = 6 A	T_{VJ} = 150°C			1.77	V
		I_F = 12 A				2.29	V
I_{FAV}	*average forward current*	T_C = 140°C	T_{VJ} = 175°C			6	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			1.13	V
r_F	*slope resistance* }					76	mΩ
R_{thJC}	*thermal resistance junction to case*					2.8	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			55	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			40	A
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		5		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25°C		1.5		A
		I_F = 6 A; V_R = 300 V	T_{VJ} = 100°C		3		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 200 A/µs	T_{VJ} = 25°C		15		ns
			T_{VJ} = 100°C		60		ns

Package TO-252 (DPak)			**Ratings**			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			20	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				0.3		g
F_C	*mounting force with clip*		20		60	N

Product Marking

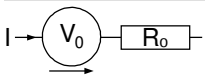


Ordering	**Ordering Number**	**Marking on Product**	**Delivery Mode**	**Quantity**	**Code No.**
Standard	DSEP6-06BS-TRL	P6QGUI	Tape & Reel	2500	502162
Alternative	DSEP6-06BS-TUB	P6QGUI	Tube	70	525000

Similar Part	**Package**	**Voltage class**
DSEP6-06AS	TO-252AA (DPak)	600

Equivalent Circuits for Simulation

** on die level* T_{VJ} = 175 °C



		Fast Diode	
$V_{0\ max}$	*threshold voltage*	1.13	V
$R_{0\ max}$	*slope resistance **	73	mΩ