preliminary

HiPerFRED

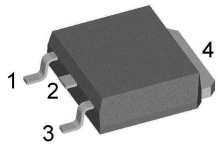
V_{RRM}	=	600 V
I_{FAV}	=	6 A
t_{rr}	=	15 ns

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

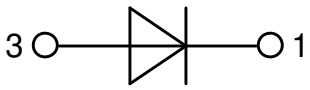
Part number

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)

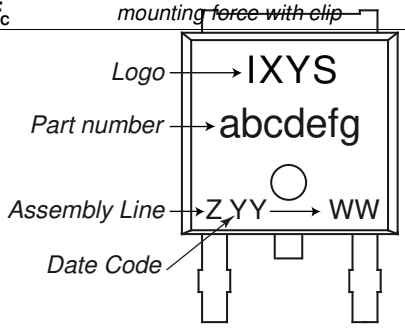
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

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

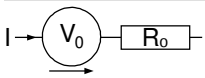


Ordering	**Ordering Number**	**Marking on Product**	**Delivery Mode**	**Quantity**	**Code No.**
Standard	DSEP6-06BS-TRL	P6QGUI	Tape & Reel	2500	502162
Alternative	DSEP6-06BS-TUB	P6QGUI	Tube	70	525000

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

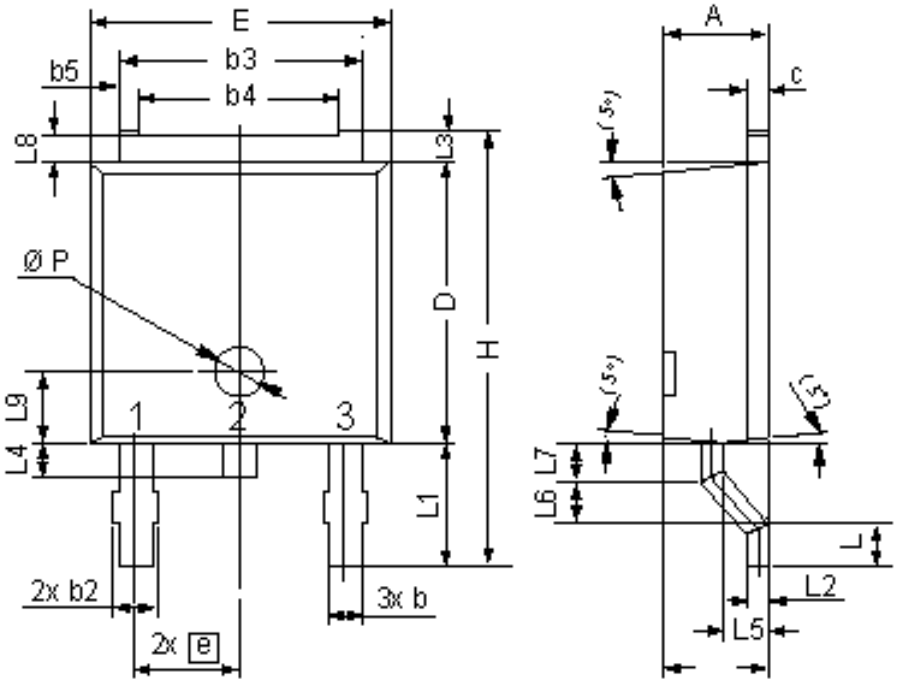
Equivalent Circuits for Simulation

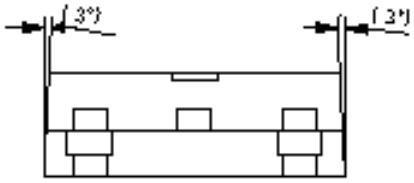
** on die level* T_{VJ} = 175 °C

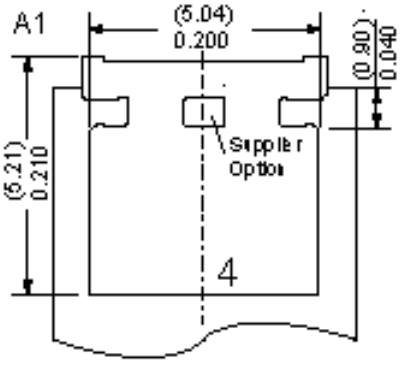


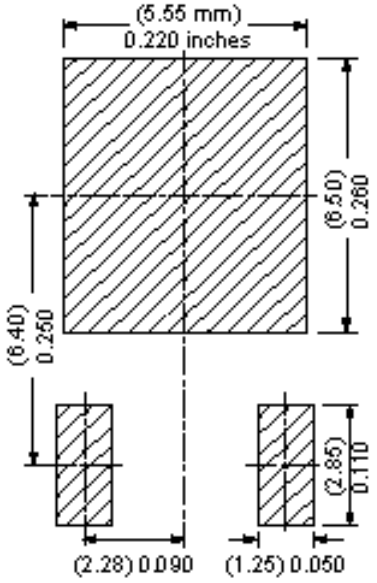
		Fast Diode	
$V_{0\ max}$	*threshold voltage*	1.13	V
$R_{0\ max}$	*slope resistance **	73	mΩ

Outlines TO-252 (DPak)









Recommended
min. foot print

Dim.	Millimeters		Inches	
	min	max	min	max
A	2.20	2.40	0.087	0.094
A1	2.10	2.50	0.083	0.098
b	0.66	0.86	0.026	0.034
b2	-	0.96	-	0.038
b3	5.04	5.64	0.198	0.222
b4	4.34 BSC		0.171 BSC	
b5	0.50 BSC		0.020 BSC	
c	0.40	0.86	0.016	0.034
D	5.90	6.30	0.232	0.248
E	6.40	6.80	0.252	0.268
e	2.10	2.50	0.083	0.098
H	9.20	10.10	0.362	0.398
L	0.55	1.28	0.022	0.050
L1	2.50	2.90	0.098	0.114
L2	0.40	0.60	0.016	0.024
L3	0.50	0.90	0.020	0.035
L4	0.60	1.00	0.024	0.039
L5	0.82	1.22	0.032	0.048
L6	0.79	0.99	0.031	0.039
L7	0.81	1.01	0.032	0.040
L8	0.40	0.80	0.016	0.031
L9	1.50 BSC		0.059 BSC	
Ø P	1.00 BSC		0.039 BSC