

$V_{RRM} = 600 V$

I_{FAV} = 30 A

 $t_{rr} = 35 \, \text{ns}$

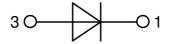
High Performance Fast Recovery Diode Low Loss and Soft Recovery Single Diode

Part number

DSEP29-06A



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-220

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

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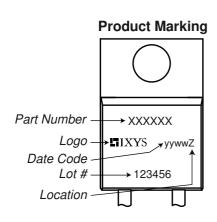




Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V _{RSM}	max. non-repetitive reverse blocki	ng voltage	$T_{VJ} = 25^{\circ}C$			600	٧
V _{RRM}	max. repetitive reverse blocking ve	oltage	$T_{VJ} = 25^{\circ}C$			600	V
IR	reverse current, drain current	$V_R = 600 \text{ V}$	$T_{VJ} = 25^{\circ}C$			250	μΑ
		$V_R = 600 V$	$T_{VJ} = 150^{\circ}C$			1	mΑ
V _F	forward voltage drop	I _F = 30 A	$T_{VJ} = 25^{\circ}C$			1,61	V
		$I_F = 60 \text{ A}$				1,94	٧
		$I_F = 30 \text{ A}$	T _{VJ} = 150°C			1,26	V
		$I_F = 60 \text{ A}$				1,56	٧
I _{FAV}	average forward current	T _C = 135°C	$T_{VJ} = 175^{\circ}C$			30	Α
		rectangular $d = 0.5$					1 1 1 1
V _{F0}	threshold voltage		$T_{VJ} = 175^{\circ}C$			0,91	V
\mathbf{r}_{F}	slope resistance	calculation only				9,4	mΩ
R _{thJC}	thermal resistance junction to case	9				0,9	K/W
R _{thCH}	thermal resistance case to heatsin	nk			0,5		K/W
P _{tot}	total power dissipation		$T_C = 25^{\circ}C$			165	W
I _{FSM}	max. forward surge current	$t = 10 \text{ ms}$; (50 Hz), sine; $V_R = 0 \text{ V}$	$T_{VJ} = 45^{\circ}C$			250	Α
CJ	junction capacitance	$V_R = 400 V$ f = 1 MHz	$T_{VJ} = 25^{\circ}C$		26		pF
I _{RM}	max. reverse recovery current	\	$T_{VJ} = 25^{\circ}C$		6		Α
		$I_F = 30 \text{ A}; V_R = 300 \text{ V}$	$T_{VJ} = 100$ °C		10		Α
t _{rr}	reverse recovery time	$\begin{cases} I_F = 30 \text{ A}; V_R = 300 \text{ V} \\ -\text{di}_F/\text{dt} = 200 \text{ A}/\mu\text{s} \end{cases}$	$T_{VJ} = 25^{\circ}C$		35		ns
		<i>)</i>	$T_{VJ} = 100$ °C		100		ns



Package	Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
I _{RMS}	RMS current	per terminal			35	Α	
T _{VJ}	virtual junction temperature		-55		175	°C	
T _{op}	operation temperature		-55		150	°C	
T _{stg}	storage temperature		-55		150	°C	
Weight				2		g	
M _D	mounting torque		0,4		0,6	Nm	
F _c	mounting force with clip		20		60	N	



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEP29-06A	DSEP29-06A	Tube	50	474819

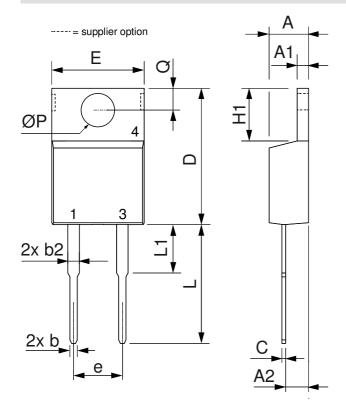
Similar Part	Package	Voltage class
DSEP29-06AS	TO-263AB (D2Pak) (2)	600
DSEP30-06A	TO-247AD (2)	600
DSEP30-06B	TO-247AD (2)	600
DSEP30-06BR	ISOPLUS247 (2)	600

DHG30I600PA	TO-220AC (2)	600
DHG30I600HA	TO-247AD (2)	600
DHG30IM600PC	TO-263AB (D2Pak) (2)	600

Equivalent Circuits for Simulation			* on die level	$T_{VJ} = 175$ °C
$I \rightarrow V_0$	R_0	Fast Diode		
V _{0 max}	threshold voltage	0,91		V
$R_{0 \; max}$	slope resistance *	6,1		$m\Omega$



Outlines TO-220



Dim.	Millimeter		Inches		
	Min.	Max.	Min.	Max.	
Α	4.32	4.82	0.170	0.190	
A1	1.14	1.39	0.045	0.055	
A2	2.29	2.79	0.090	0.110	
b	0.64	1.01	0.025	0.040	
b2	1.15	1.65	0.045	0.065	
С	0.35	0.56	0.014	0.022	
D	14.73	16.00	0.580	0.630	
Е	9.91	10.66	0.390	0.420	
е	5.08	BSC	0.200	BSC	
H1	5.85	6.85	0.230	0.270	
L	12.70	13.97	0.500	0.550	
L1	2.79	5.84	0.110	0.230	
ØP	3.54	4.08	0.139	0.161	
Q	2.54	3.18	0.100	0.125	





Fast Diode

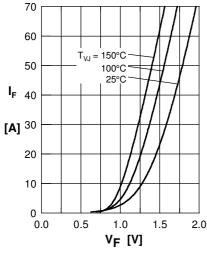


Fig. 1 Forward current I_F versus V_F



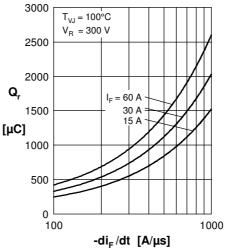


Fig. 2 Typ. reverse recov. charge Q_r versus -di_F/dt

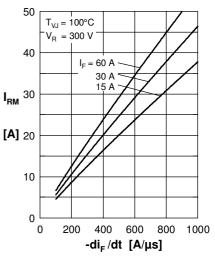


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

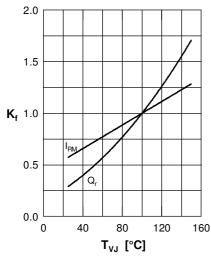


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

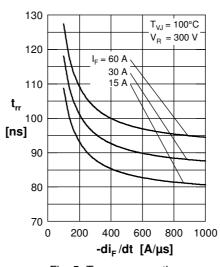


Fig. 5 Typ. recovery time t_{rr} versus -di_F/dt

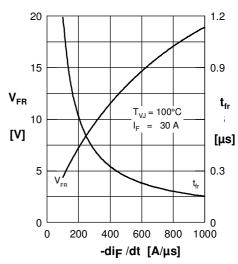


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

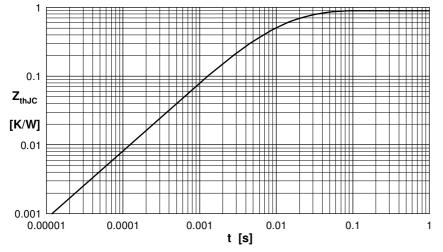


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

İ	R_{thi} (K/W)	t _i (s)
1	0.030	0.001
2	0.080	0.030
3	0.300	0.006
4	0.490	0.060