Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

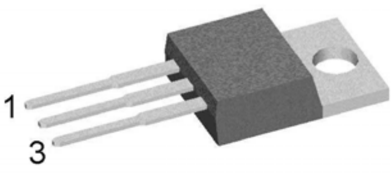
HiPerFRED

V_{RRM} = 600 V
I_{FAV} = 2x 10 A
t_{rr} = 30 ns

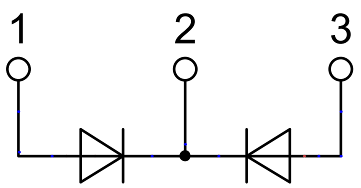
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSEC16-06A



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

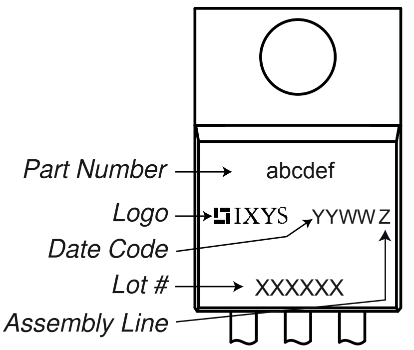
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

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			60	µA
		V_R = 600 V	T_{VJ} = 150°C			0.25	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			2.10	V
		I_F = 20 A				2.32	V
		I_F = 10 A	T_{VJ} = 150°C			1.42	V
		I_F = 20 A				1.68	V
I_{FAV}	*average forward current*	T_C = 135°C; rectangular d = 0.5	T_{VJ} = 175°C			10	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 175°C			1.03	V
r_F	*slope resistance*	*for power loss calculation only*				25.1	mΩ
R_{thJC}	*thermal resistance junction to case*					2.5	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			60	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			50	A
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		6		pF
I_{RM}	*max. reverse recovery current*	I_F = 10 A; V_R = 100 V; $-di_F/dt$ = 200 A/µs	T_{VJ} = 25°C		4		A
			T_{VJ} = 100°C		6		A
t_{rr}	*reverse recovery time*	I_F = 10 A; V_R = 100 V; $-di_F/dt$ = 200 A/µs	T_{VJ} = 25°C		30		ns
			T_{VJ} = 100°C		90		ns

Package TO-220			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal [1)]			35	A
T_{stg}	*storage temperature*		-55		150	°C
T_{VJ}	*virtual junction temperature*		-55		175	°C
Weight				2		g
M_D	*mounting torque*		0.4		0.6	Nm
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 common cathode/anode configuration with a non-isolated backside, the current capability can be increased by connecting the backside.

Product Marking

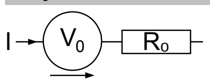


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEC16-06A	DSEC16-06A	Tube	50	475130

Similar Part	Package	Voltage class
DSEC16-06AC	ISOPLUS220AB (3)	600

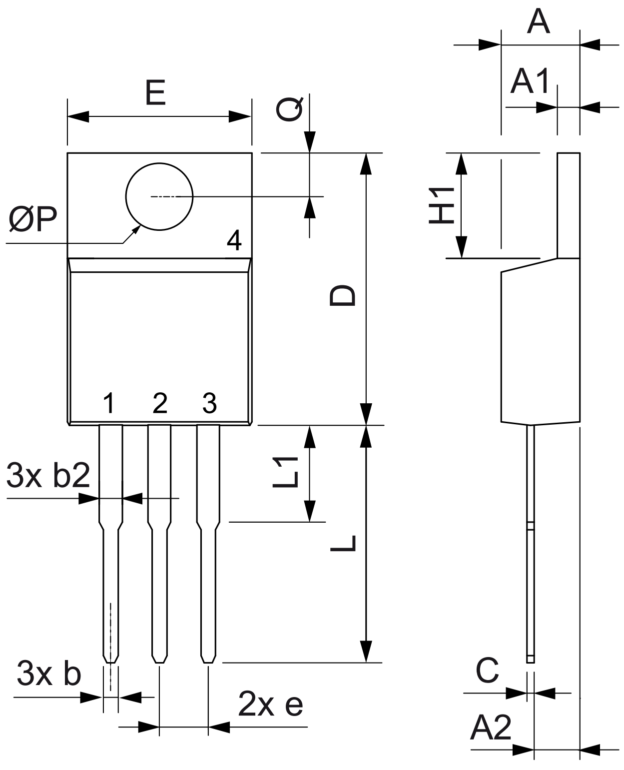
Equivalent Circuits for Simulation

** on die level* T_{VJ} = 175°C

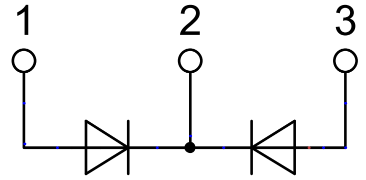


		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.03	V
$R_{0\,max}$	*slope resistance **	22	mΩ

Outlines TO-220



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	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
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	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

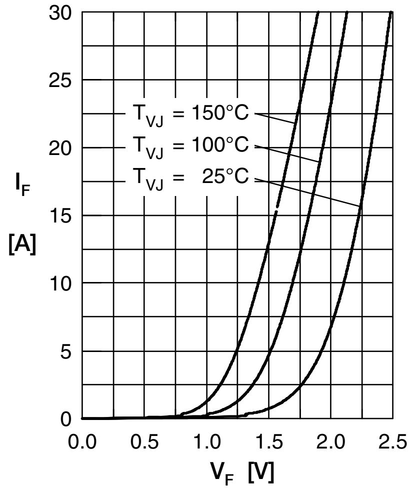


Fig. 1 Forward current I_F versus V_F

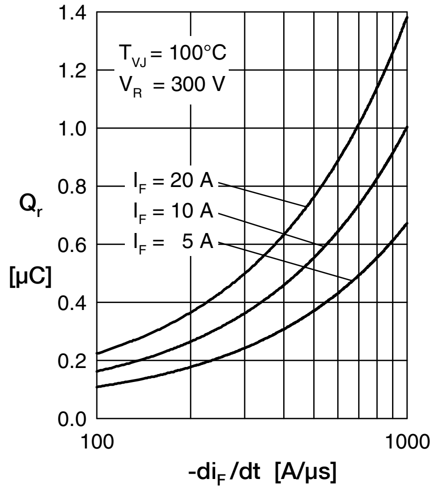


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

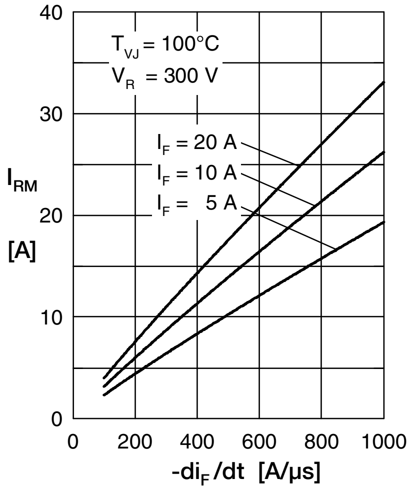


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

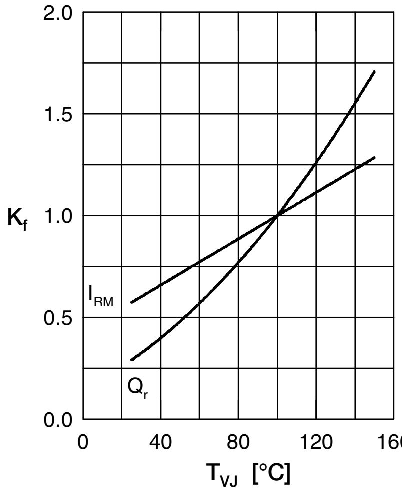


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

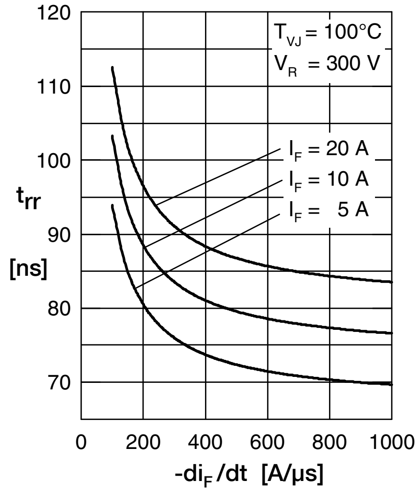


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

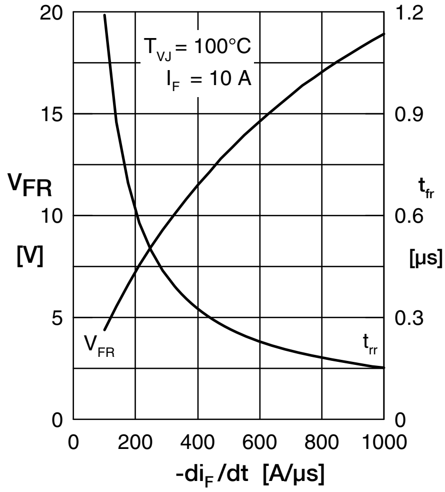


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

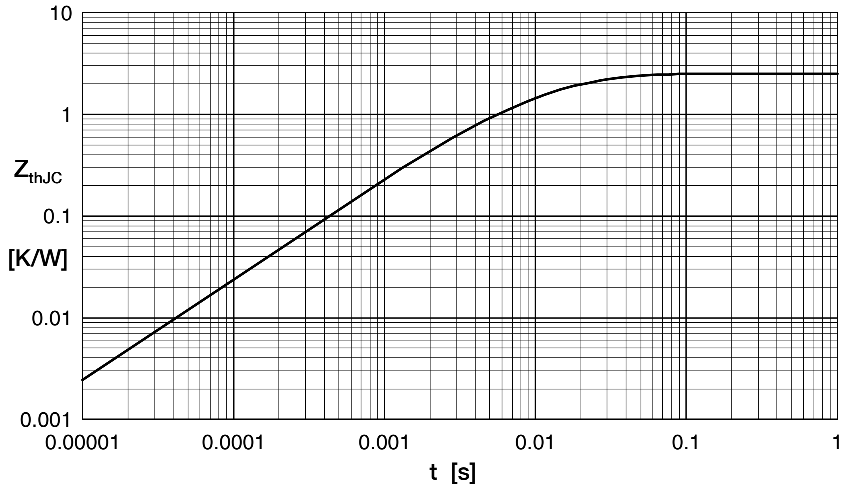


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	1.449	0.0052
2	0.5578	0.0003
3	0.4931	0.0169