preliminary

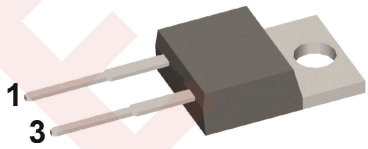
Sonic Fast Recovery Diode

V_{RRM}	=	1200 V
I_{FAV}	=	20 A
t_{rr}	=	200 ns

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

Part number

DHG20I1200PA



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

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

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Fast Diode

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current, drain current*	V_R = 1200 V	T_{VJ} = 25°C			30	µA
		V_R = 1200 V	T_{VJ} = 125°C			0.4	mA
V_F	*forward voltage drop*	I_F = 20 A	T_{VJ} = 25°C			2.24	V
		I_F = 40 A				2.90	V
		I_F = 20 A	T_{VJ} = 125°C			2.25	V
		I_F = 40 A				3.17	V
I_{FAV}	*average forward current*	T_C = 95°C rectangular d = 0.5	T_{VJ} = 150°C			20	A
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			1.25	V
r_F	*slope resistance*					45	mΩ
R_{thJC}	*thermal resistance junction to case*					0.9	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.5		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			140	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			150	A
C_J	*junction capacitance*	V_R = 600 V f = 1 MHz	T_{VJ} = 25°C		8		pF
I_{RM}	*max. reverse recovery current*	I_F = 20 A; V_R = 600 V $-di_F/dt$ = 400 A/µs	T_{VJ} = 25 °C		15		A
			T_{VJ} = 125 °C		20		A
t_{rr}	*reverse recovery time*		T_{VJ} = 25 °C		200		ns
			T_{VJ} = 125 °C		350		ns

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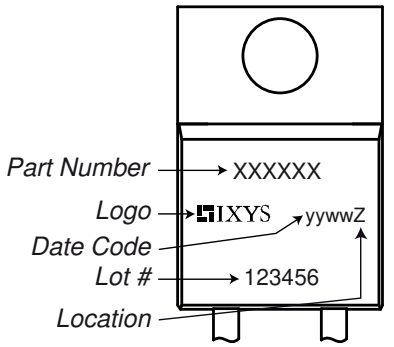
Package TO-220			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			35	A
T_{VJ}	*virtual junction temperature*		-55		150	°C
T_{op}	*operation temperature*		-55		125	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				2		g
M_D	*mounting torque*		0.4		0.6	Nm
F_C	*mounting force with clip*		20		60	N

Product Marking



Part description

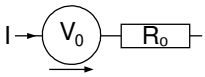
D = Diode
H = Sonic Fast Recovery Diode
G = extreme fast
20 = Current Rating [A]
I = Single Diode
1200 = Reverse Voltage [V]
PA = TO-220AC (2)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG20I1200PA	DHG20I1200PA	Tube	50	504934

Similar Part	Package	Voltage class
DHG20I1200HA	TO-247AD (2)	1200

Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 150°C$



		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.25	V
$R_{0\,max}$	*slope resistance **	42	mΩ

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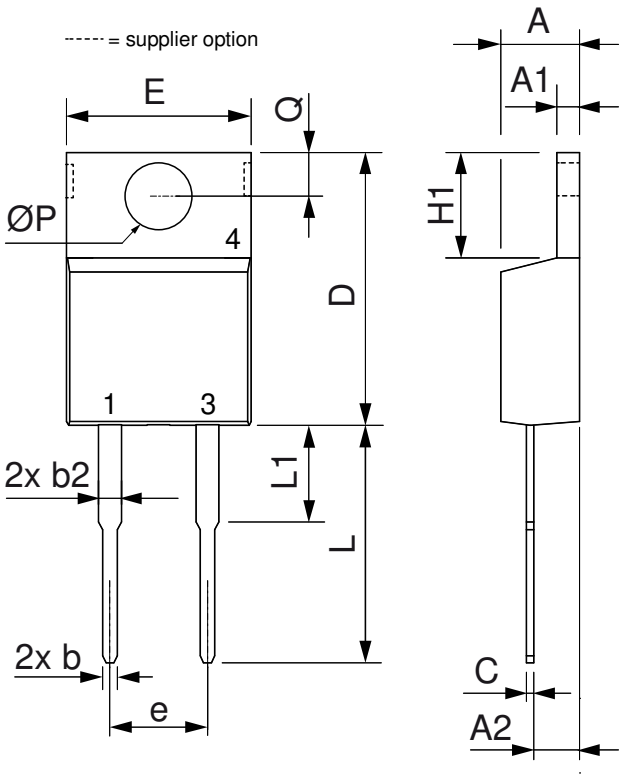
Outlines TO-220



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	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

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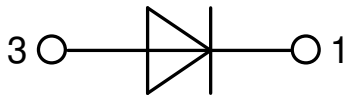

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Fast Diode

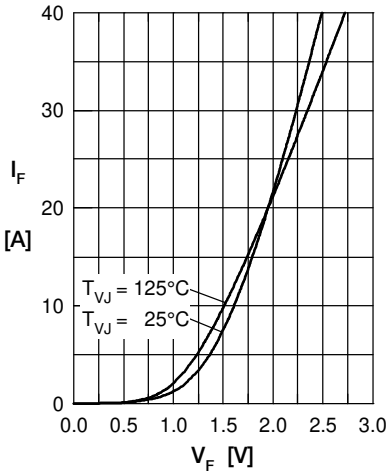

Fig. 1 Typ. Forward current versus V_F

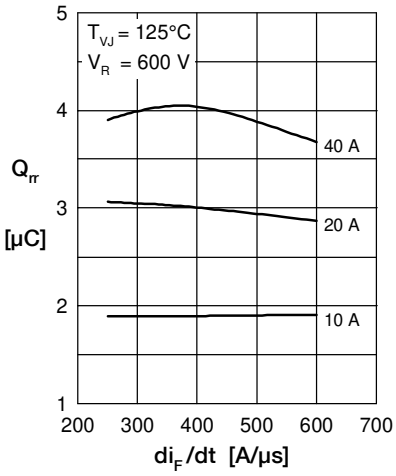

Fig. 2 Typ. reverse recov. charge Q_{rr} versus di/dt

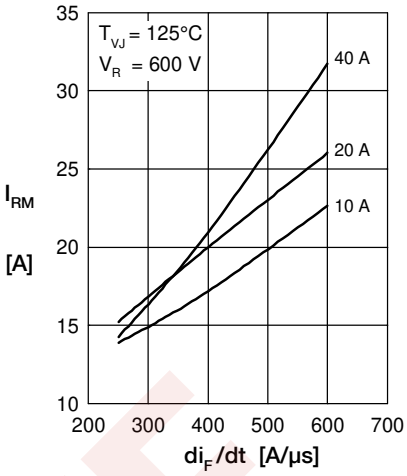

Fig. 3 Typ. peak reverse current I_{RM} versus di/dt

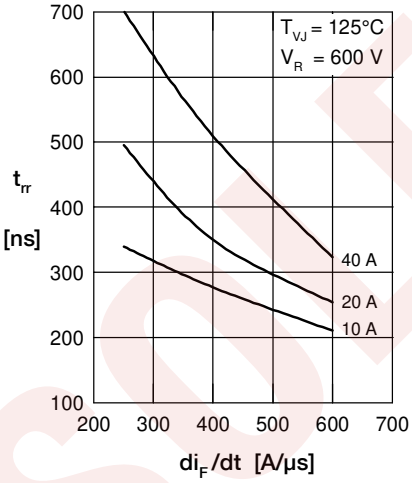

Fig. 5 Typ. recovery time t_{rr} versus di/dt

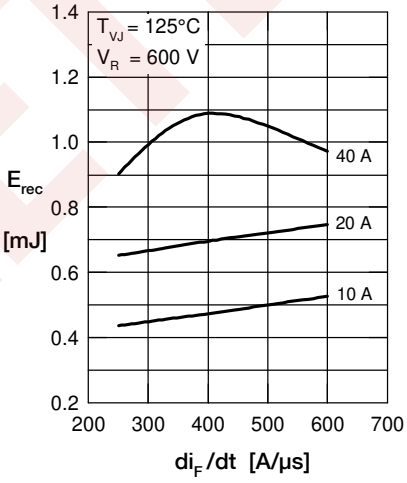

Fig. 6 Typ. recovery energy E_{rec} versus di/dt

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

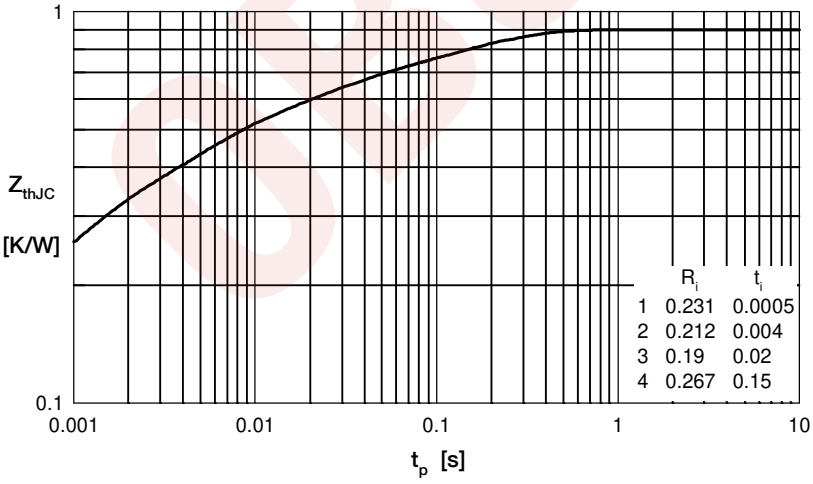

Fig. 7 Typ. transient thermal impedance junction to case

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