Sonic Fast Recovery Diode

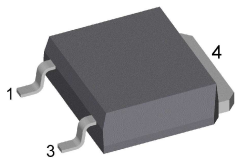
V_{RRM}	=	1800 V
I_{FAV}	=	10 A
t_{rr}	=	260 ns

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

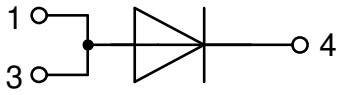
Part number

DHG10IM1800UZ

Marking on Product: HAVGZI



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)

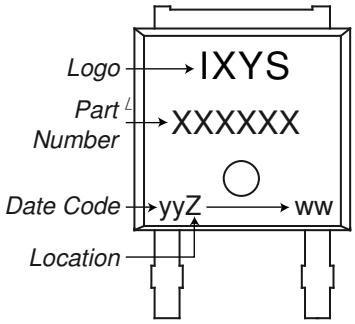
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Fast Diode

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1800	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1800	V
I_R	*reverse current, drain current*	V_R = 1800 V	T_{VJ} = 25°C			50	µA
		V_R = 1800 V	T_{VJ} = 150°C			0.4	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			2.27	V
		I_F = 20 A				2.94	V
		I_F = 10 A	T_{VJ} = 150°C			2.43	V
		I_F = 20 A				3.42	V
I_{FAV}	*average forward current*	T_C = 110°C	T_{VJ} = 175°C			10	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			1.40	V
r_F	*slope resistance* }					101	mΩ
R_{thJC}	*thermal resistance junction to case*					1.5	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.5		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			85	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			60	A
C_J	*junction capacitance*	V_R = 200 V f = 1 MHz	T_{VJ} = 25°C		3		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25°C		15		A
		I_F = 10 A; V_R = 900 V	T_{VJ} = 150°C		17.5		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 350 A/µs	T_{VJ} = 25°C		260		ns
			T_{VJ} = 150°C		350		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
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*	*terminal to terminal*	3.6			mm
$d_{Spb/Apb}$		*terminal to backside*	3.0			mm

Product Marking



Part description

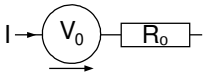
D = Diode
H = Sonic Fast Recovery Diode
G = extreme fast
10 = Current Rating [A]
IM = Single Diode
1800 = Reverse Voltage [V]
UZ = TO-252AA (DPak) (2HV)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG10IM1800UZ-TRL	HAVGZI	Tape & Reel	2500	526360
Alternative	DHG10IM1800UZ-TUB	HAVGZI	Tube	70	526353

Similar Part	Package	Voltage class
DHG10I1800PA	TO-220AC (2)	1800

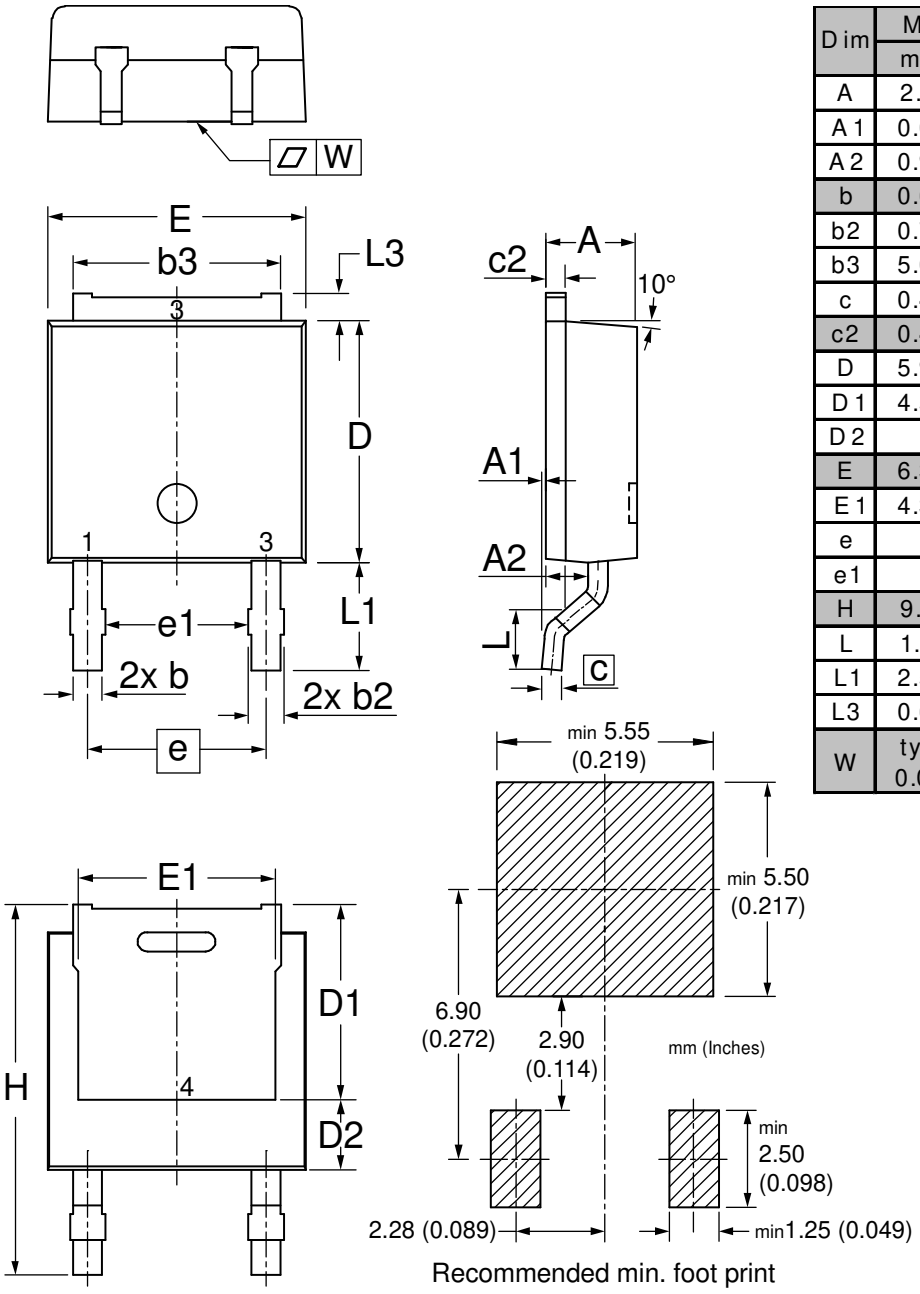
Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 175°C$

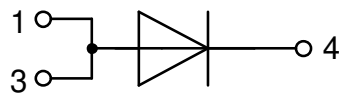


		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.4	V
$R_{0\,max}$	*slope resistance **	98	mΩ

Outlines TO-252 (DPak)



Dim	Millimeters		Inches	
	min	max	min	max
A	2.18	2.39	0.086	0.094
A1	0.00	0.13	0.000	0.005
A2	0.97	1.17	0.038	0.046
b	0.64	0.89	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	5.08	5.59	0.200	0.220
c	0.46	0.61	0.018	0.024
c2	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.57	5.21	0.180	0.205
D2	2.03		0.080	
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	4.57		0.180	
e1	3.62		0.143	
H	9.15	10.34	0.360	0.407
L	1.40	1.78	0.055	0.070
L1	2.54	2.92	0.100	0.115
L3	0.64	1.02	0.025	0.040
W	typ. 0.02	0.040	typ. 0.0008	0.000



Fast Diode

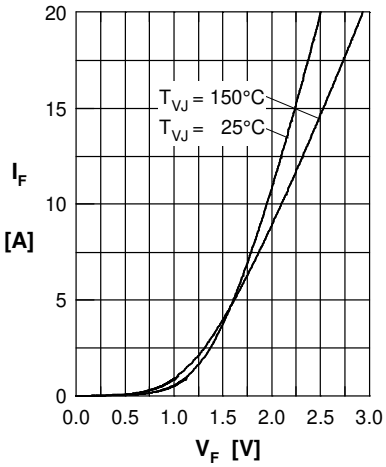


Fig. 1 Typ. Forward current versus V_F

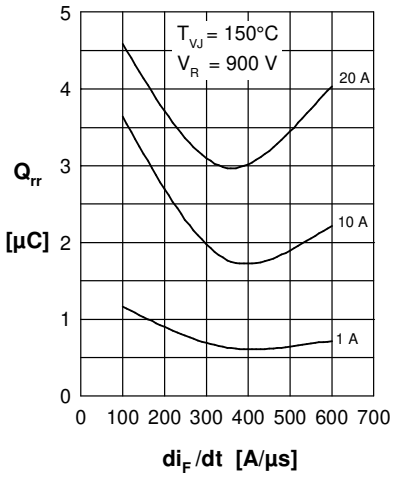


Fig. 2 Typ. reverse recov. charge Q_{rr} versus di/dt

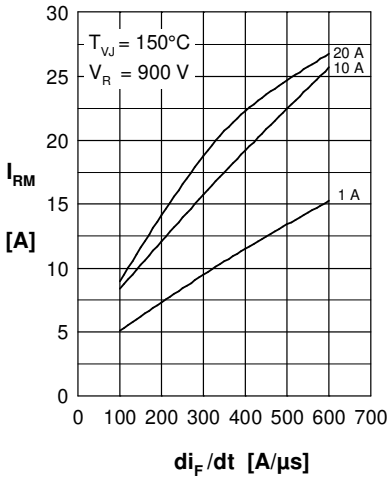


Fig. 3 Typ. peak reverse current I_{RM} versus di/dt

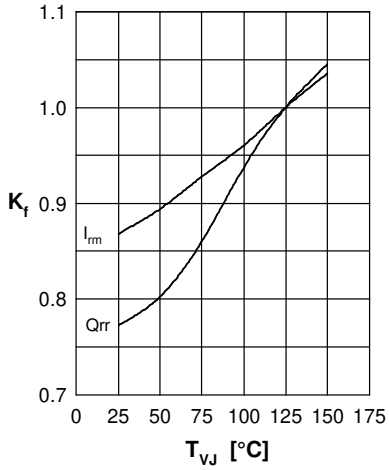


Fig. 4 Dynamic parameters Q_{rr}, I_{RM} versus T_{VJ}

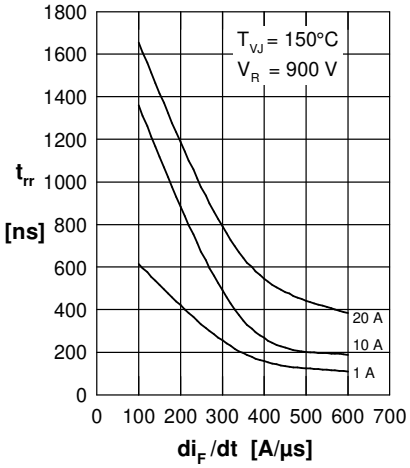


Fig. 5 Typ. recovery time t_{rr} versus di_F/dt

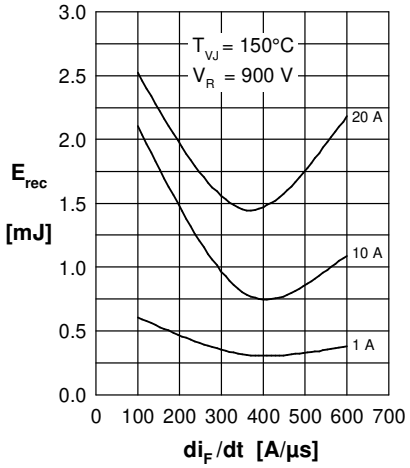


Fig. 6 Typ. recovery energy E_{rec} versus di/dt

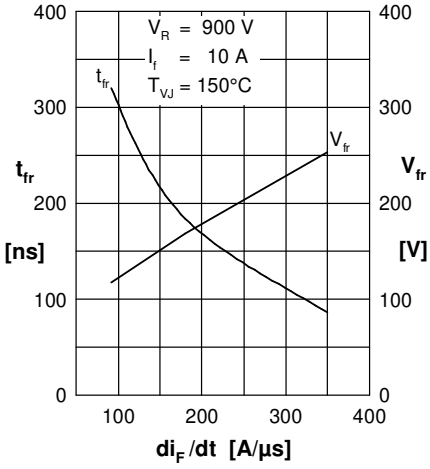


Fig. 7 Typ. peak forward voltage Vfr_{fr} and t_{fr} versus di_F/dt

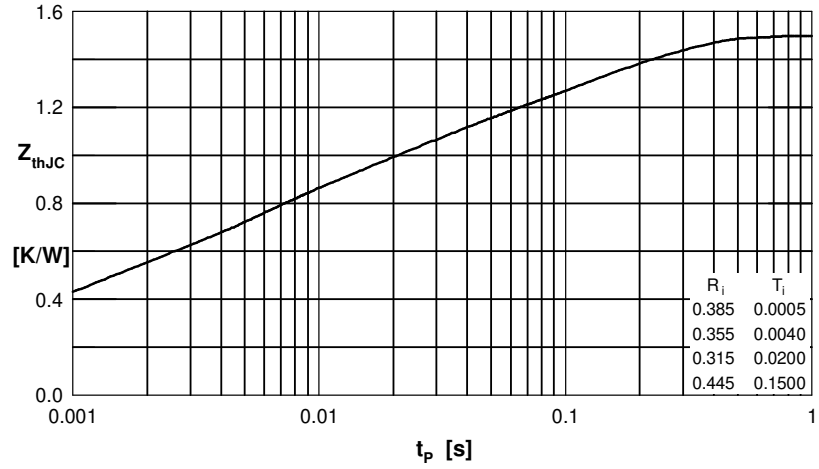


Fig. 8 Typ. transient thermal impedance junction to case