

Sonic Fast Recovery Diode

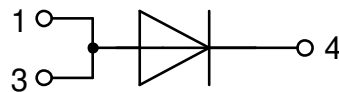
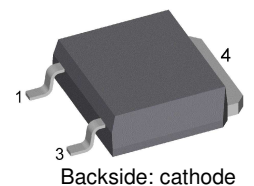
$V_{RRM} = 1800\text{ V}$
 $I_{FAV} = 10\text{ A}$
 $t_{rr} = 260\text{ ns}$

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

Part number

DHG10IM1800UZ

Marking on Product: HAVGZI



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} 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

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.

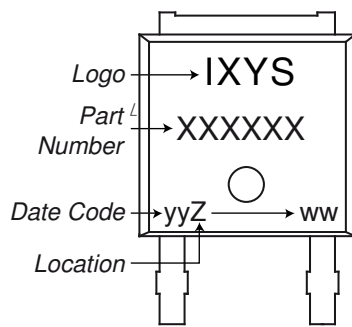


Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1800	V	
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1800	V	
I_R	reverse current, drain current	$V_R = 1800 V$	$T_{VJ} = 25^{\circ}C$		50	μA	
		$V_R = 1800 V$	$T_{VJ} = 150^{\circ}C$		0.4	mA	
V_F	forward voltage drop	$I_F = 10 A$	$T_{VJ} = 25^{\circ}C$		2.27	V	
		$I_F = 20 A$			2.94	V	
		$I_F = 10 A$	$T_{VJ} = 150^{\circ}C$		2.43	V	
		$I_F = 20 A$			3.42	V	
I_{FAV}	average forward current	$T_C = 110^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 175^{\circ}C$		10	A	
V_{FO}	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}C$		1.40	V	
r_F	slope resistance				101	m Ω	
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		$T_C = 25^{\circ}C$		85	W	
I_{FSM}	max. forward surge current	$t = 10 ms; (50 Hz), sine; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		60	A	
C_J	junction capacitance	$V_R = 200 V \quad f = 1 MHz$	$T_{VJ} = 25^{\circ}C$		3	pF	
I_{RM}	max. reverse recovery current	} $I_F = 10 A; V_R = 900 V$ $-di_F / dt = 350 A/\mu s$	$T_{VJ} = 25^{\circ}C$		15	A	
			$T_{VJ} = 150^{\circ}C$		17.5	A	
t_{rr}	reverse recovery time		$T_{VJ} = 25^{\circ}C$		260	ns	
			$T_{VJ} = 150^{\circ}C$		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)

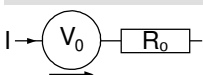
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG10IM1800UZ-TRL	HAVGZI	Tape & Reel	2500	526360
Alternative	DHG10IM1800UZ-TUB	HAVGZI	Tube	70	526353

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

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175^{\circ}C$

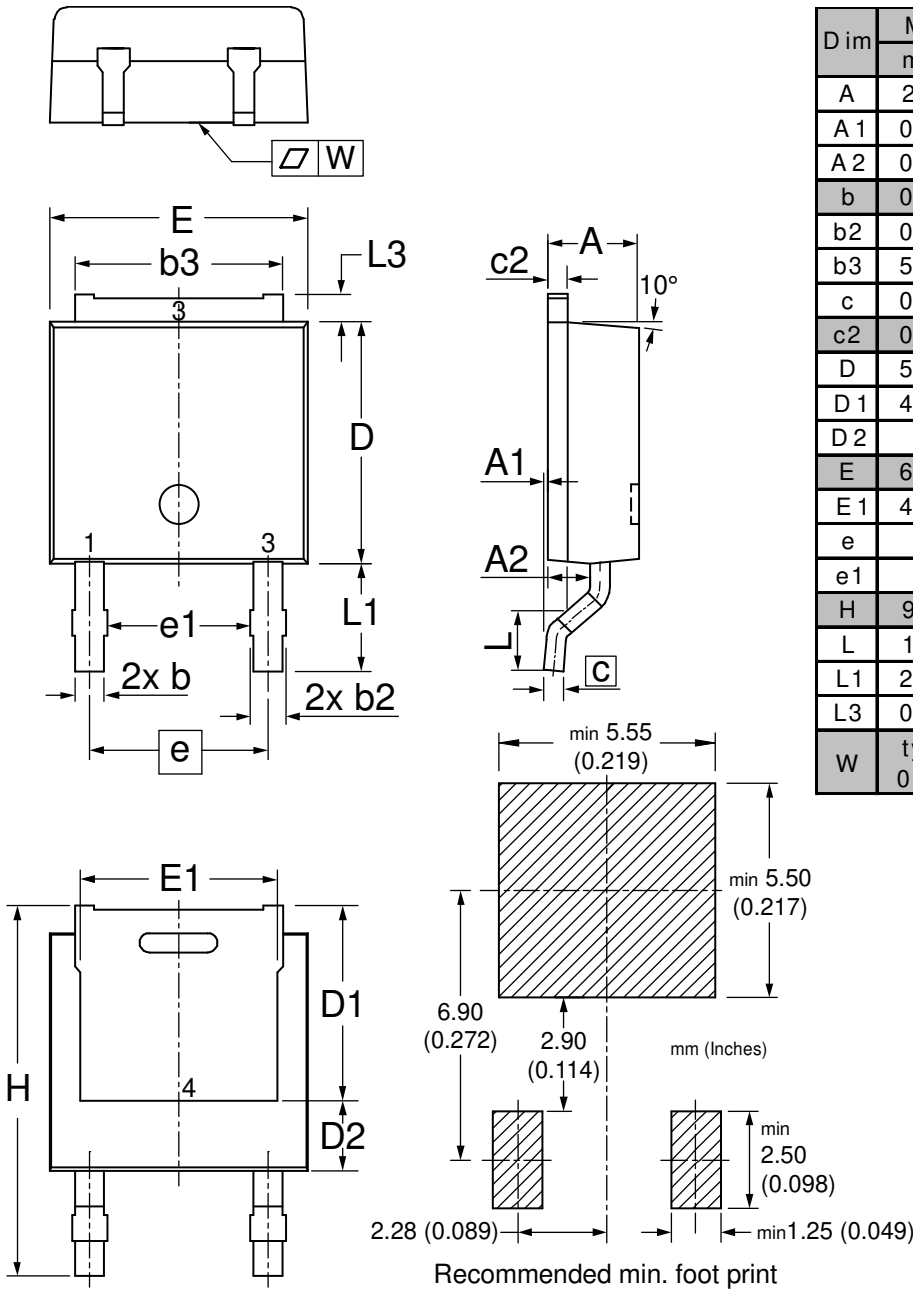


Fast Diode

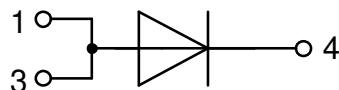
$V_{0\ max}$	threshold voltage	1.4	V
$R_{0\ max}$	slope resistance *	98	mΩ



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

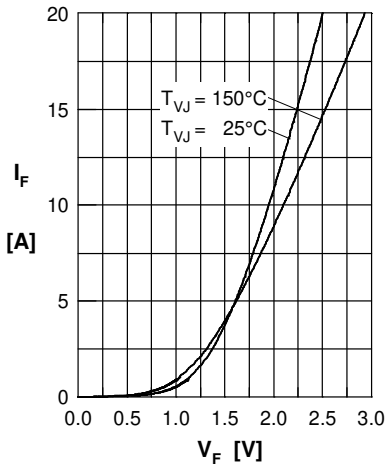


Fig. 1 Typ. Forward current versus V_F

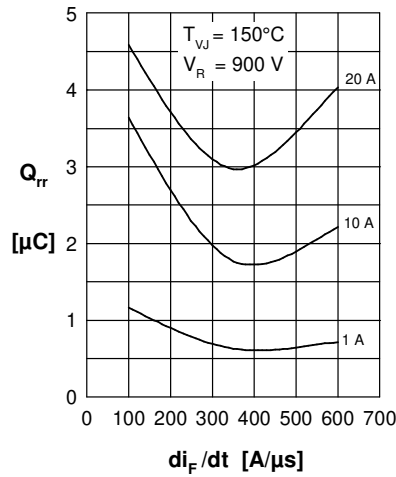


Fig. 2 Typ. reverse recov. charge Q_{rr} versus di/dt

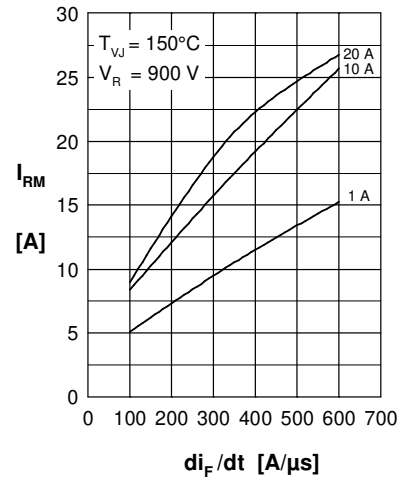


Fig. 3 Typ. peak reverse current I_{RM} versus di/dt

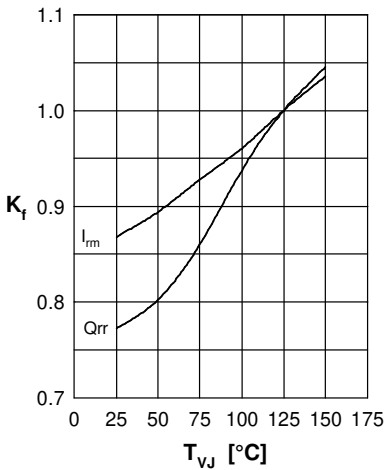


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

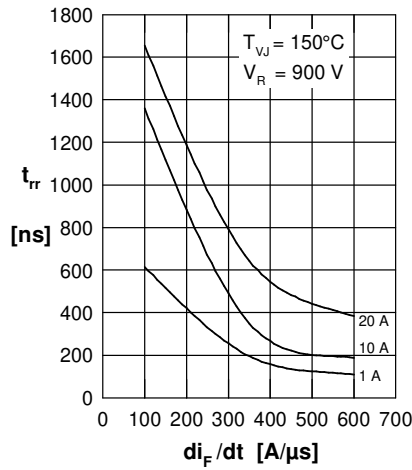


Fig. 5 Typ. recovery time t_{rr} versus di_F/dt

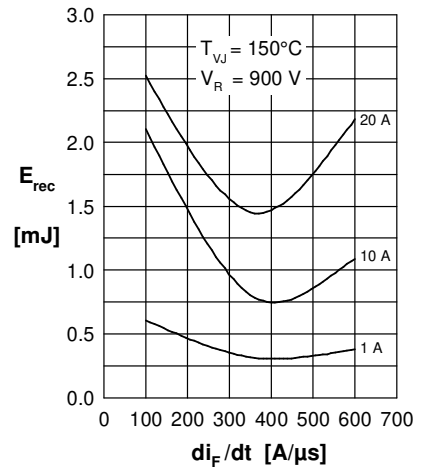


Fig. 6 Typ. recovery energy E_{rec} versus di/dt

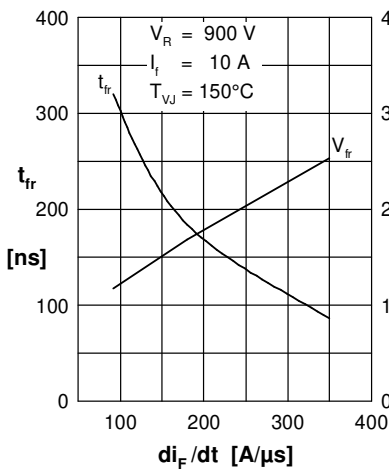


Fig. 7 Typ. peak forward voltage V_{fr} and t_{rr} versus di_F/dt

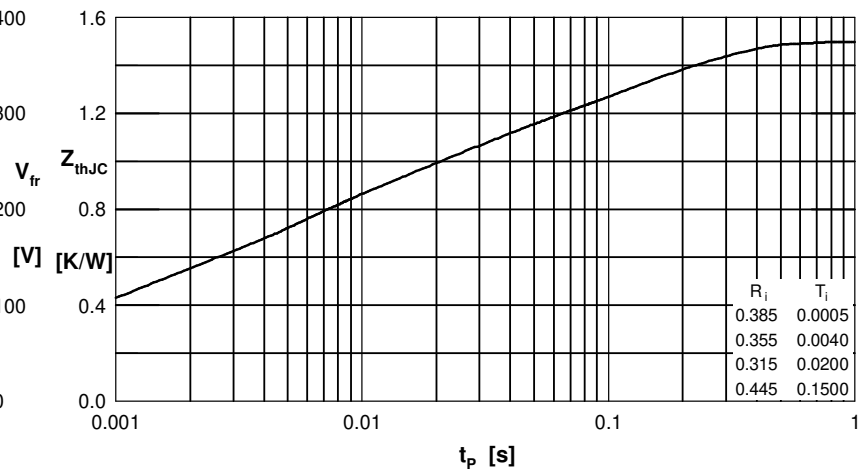


Fig. 8 Typ. transient thermal impedance junction to case