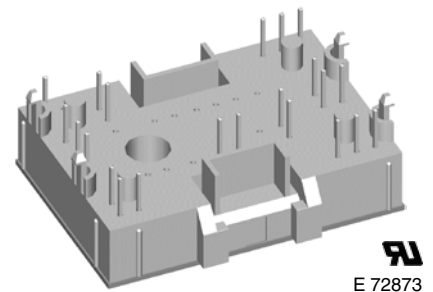
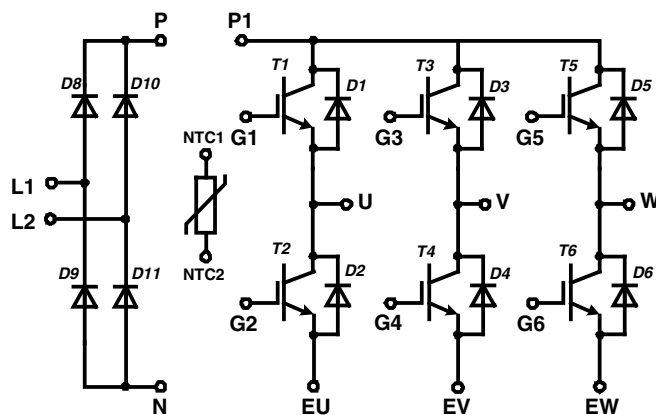


Converter - Inverter Module NPT IGBT

Single Phase Rectifier	Three Phase Inverter
$V_{RRM} = 1600 \text{ V}$	$V_{CES} = 600 \text{ V}$
$I_{DAVM25} = 65 \text{ A}$	$I_{C25} = 29 \text{ A}$
$I_{FSM} = 550 \text{ A}$	$V_{CE(sat)} = 2.1 \text{ V}$

Part name (Marking on product)

MIAA20WD600TMH




E 72873

Pin configuration see outlines.

Features:

- High level of integration - only one power semiconductor module required for the whole drive
- Inverter with NPT IGBTs
 - low saturation voltage
 - positive temperature coefficient
 - fast switching
 - short tail current
- Epitaxial free wheeling diodes with hiperfast soft reverse recovery
- Temperature sense included

Application:

- AC motor drives
- Pumps, Fans
- Washing machines
- Air-conditioning system
- Inverter and power supplies

Package:

- "Mini" package
- Assembly height is 17 mm
- Insulated base plate
- Pins suitable for wave soldering and PCB mounting
- Assembly clips available
 - IXKU 5-505 screw clamp
 - IXRB 5-506 click clamp
- UL registered E72873

Input Rectifier Bridge D8 - D11

Symbol	Definitions	Conditions	min.	Ratings			Unit
				typ.	max.		
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			1600		V
I_{FAV}	average forward current	sine 180°			39		A
I_{DAVM}	max. average DC output current	rect.; $d = 1/2$			42		A
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}$; sine 50 Hz			550		A
					tbd		A
I^2t	I^2t value for fusing	$t = 10 \text{ ms}$; sine 50 Hz			1270		A^2s
					tbd		A^2s
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			100		W
V_F	forward voltage	$I_F = 30 \text{ A}$		1.2	1.5		V
				1.3			V
I_R	reverse current	$V_R = V_{RRM}$			0.03		mA
				0.3			mA
R_{thJC}	thermal resistance junction to case	(per diode)			1.2		K/W
R_{thCH}	thermal resistance case to heatsink	(per diode)		0.4			K/W

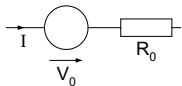
Temperature Sensor NTC

Symbol	Definitions	Conditions	min.	Ratings			Unit
				typ.	max.		
R_{25}	resistance	$T_C = 25^{\circ}\text{C}$	4.75	5.0	5.25		$\text{k}\Omega$
$B_{25/50}$				3375			K

Module

Symbol	Definitions	Conditions	min.	Ratings			Unit
				typ.	max.		
T_{VJ}	operating temperature		-40		125		$^{\circ}\text{C}$
T_{VJM}	max. virtual junction temperature				150		$^{\circ}\text{C}$
T_{stg}	storage temperature		-40		125		$^{\circ}\text{C}$
V_{ISOL}	isolation voltage	$I_{ISOL} \leq 1 \text{ mA}$; 50/60 Hz			2500		V~
CTI	comparative tracking index			-			
F_C	mounting force		40		80		N
d_S	creep distance on surface		12.7				mm
d_A	strike distance through air		12				mm
Weight				35			g

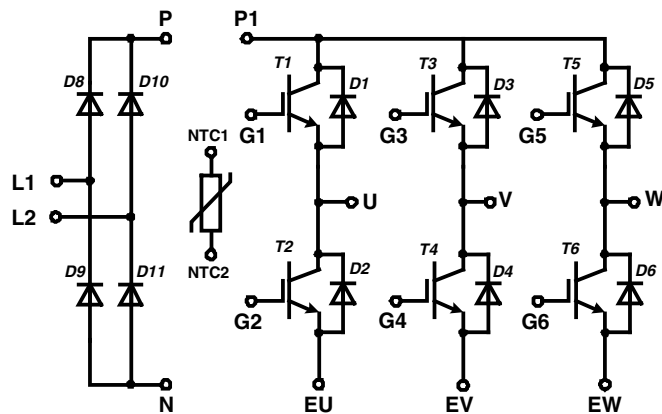
Equivalent Circuits for Simulation



Symbol	Definitions	Conditions	min.	Ratings			Unit
				typ.	max.		
V_0	rectifier diode	D8 - D11	$T_{VJ} = 125^{\circ}\text{C}$	0.9			V
R_0				6			$\text{m}\Omega$
V_0	IGBT	T1 - T6	$T_{VJ} = 125^{\circ}\text{C}$	1.7			V
R_0				40			$\text{m}\Omega$
V_0	free wheeling diode	D1 - D6	$T_{VJ} = 125^{\circ}\text{C}$	1.25			V
R_0				12			$\text{m}\Omega$

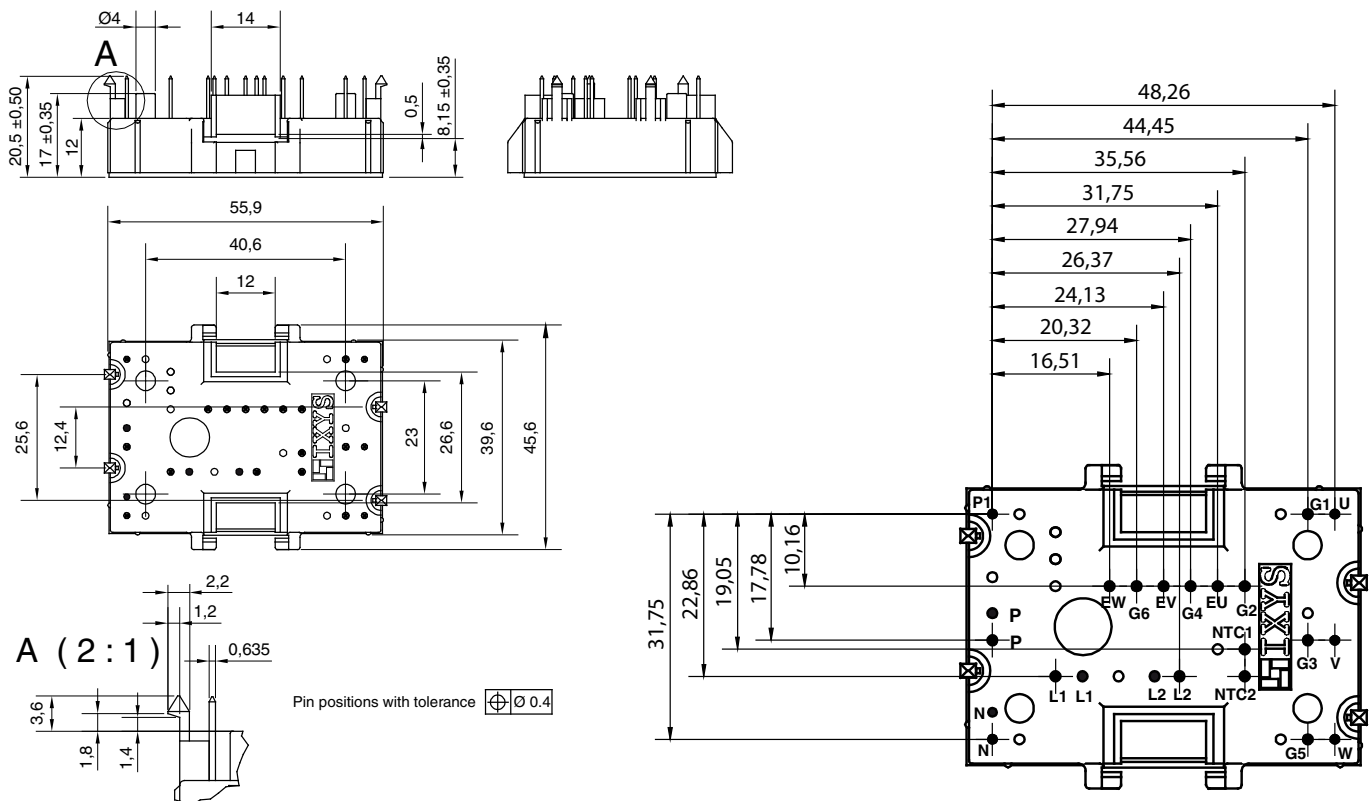
$T_C = 25^{\circ}\text{C}$ unless otherwise stated

Circuit Diagram

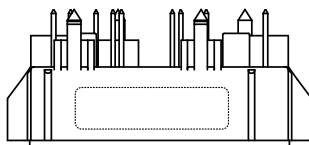


Outline Drawing

Dimensions in mm (1 mm = 0.0394")



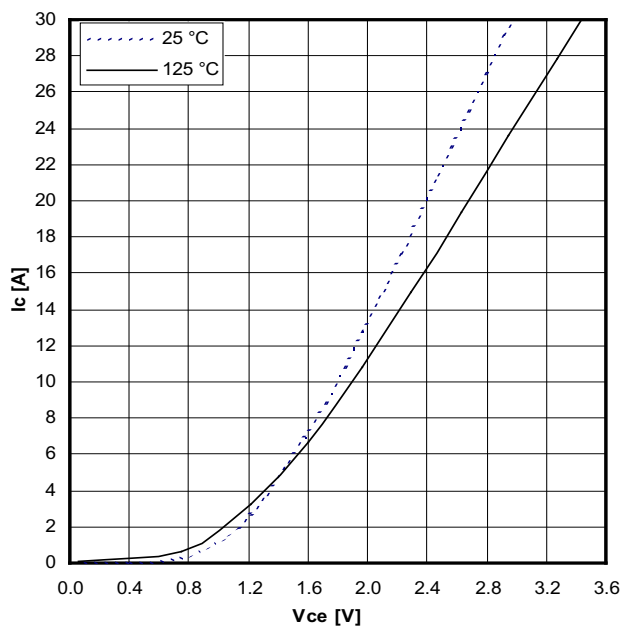
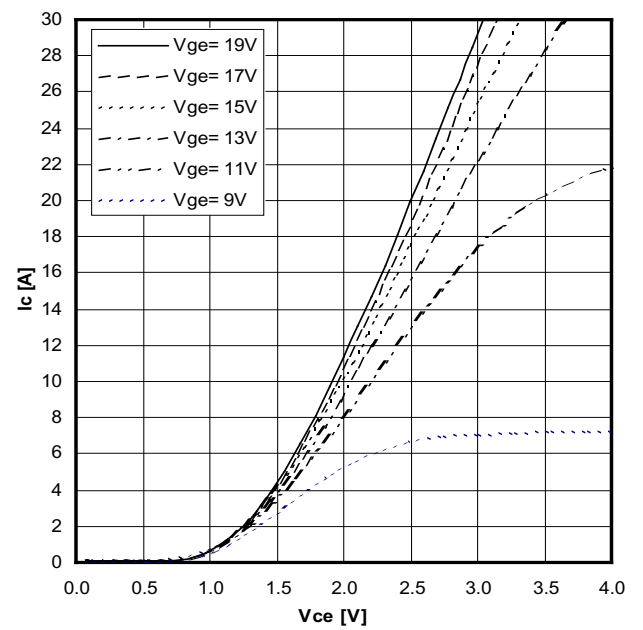
Product Marking



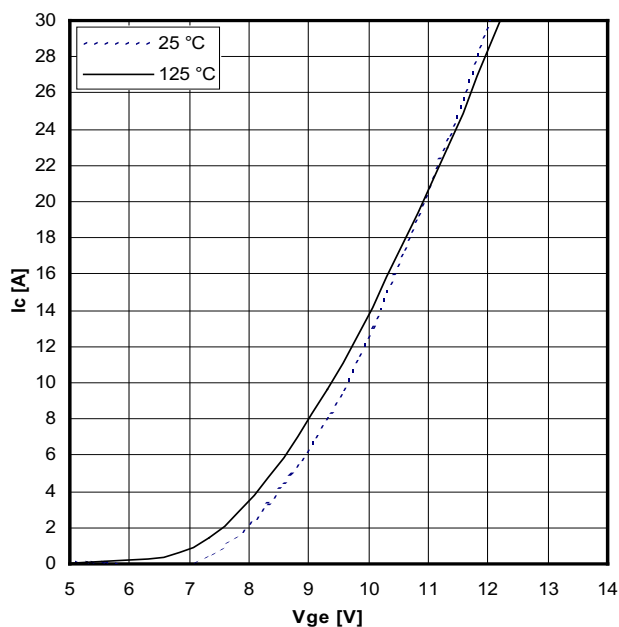
Part number

M = Module
I = IGBT
A = IGBT (NPT)
A = Gen 1 / std
20 = Current Rating [A]
WD = 6-Pack + 1~ Rectifier Bridge
600 = Reverse Voltage [V]
T = NTC
MH = MiniPack2

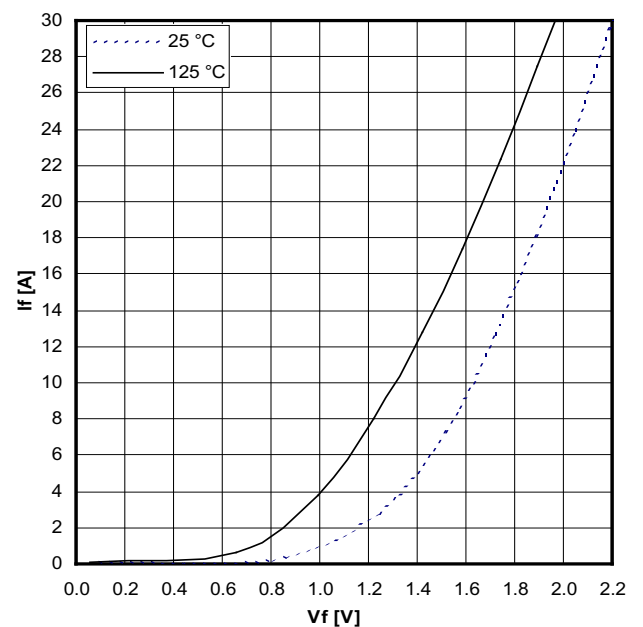
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MIAA 20 WD 600 TMH	MIAA20WD600TMH	Box	20	504975


Typical output characteristics, $V_{GE} = 15\text{ V}$


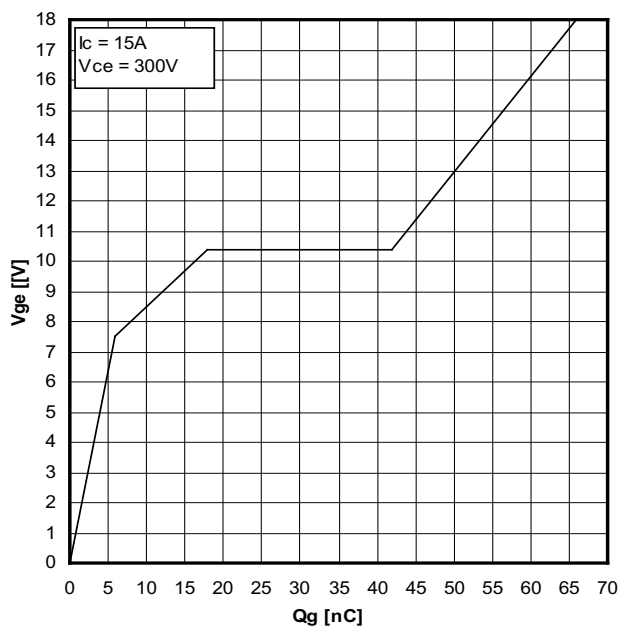
Typical output characteristics (125 °C)



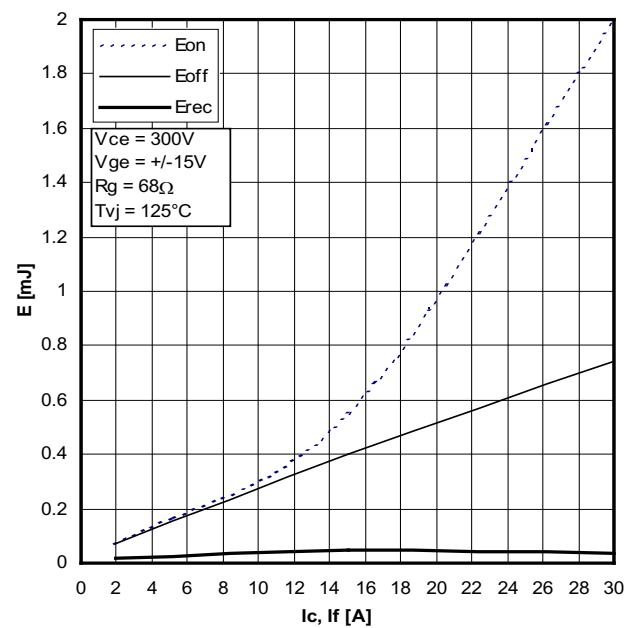
Typical transfer characteristics



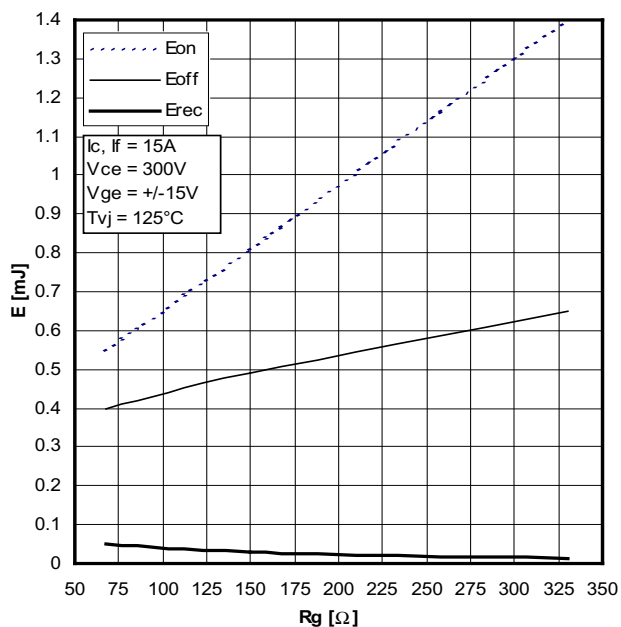
Typical forward characteristics of freewheeling diode



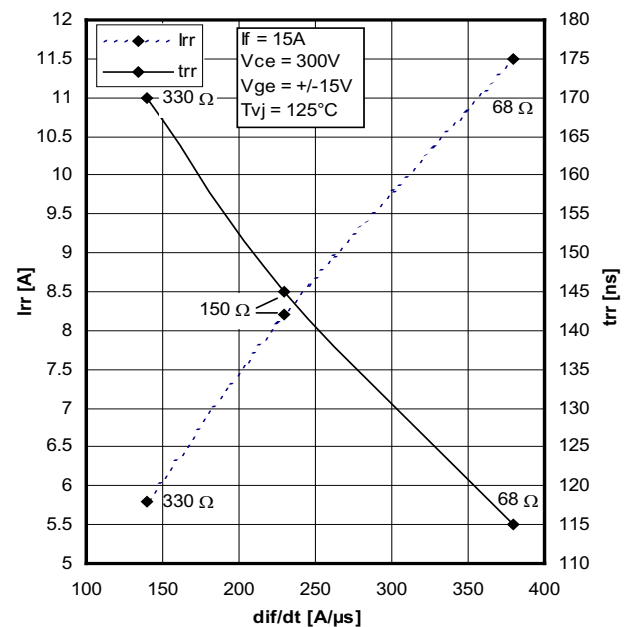
Typical turn on gate charge



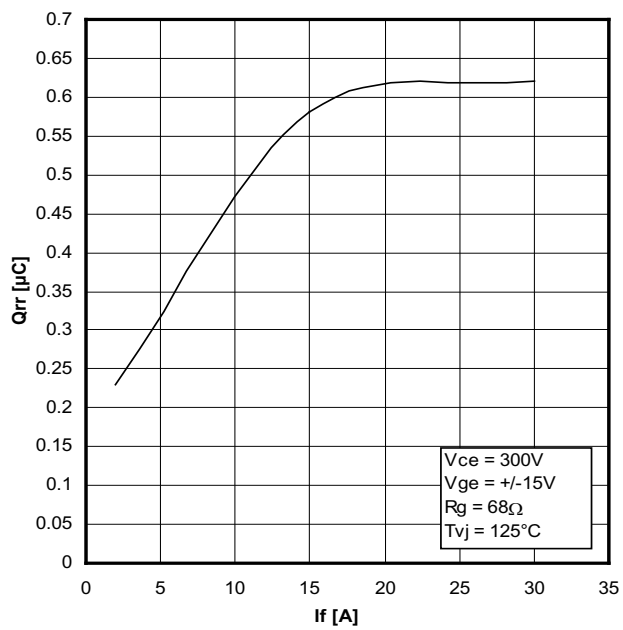
Typical switching energy versus collector current



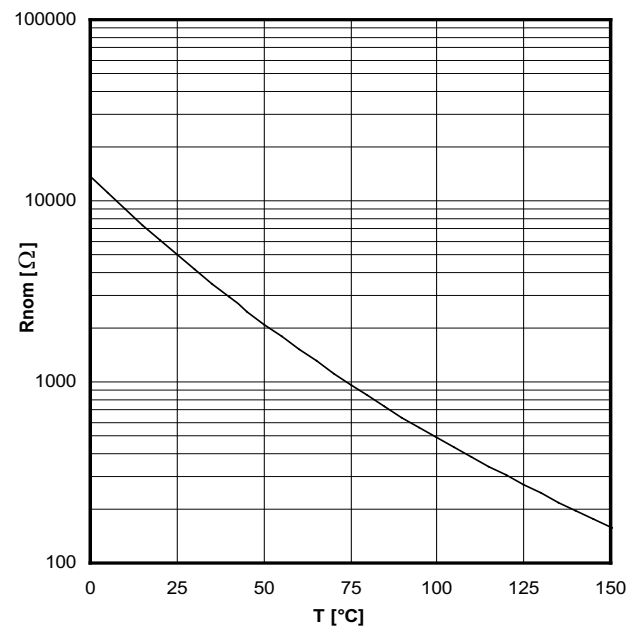
Typical switching energy versus gate resistance



Typical turn-off characteristics of free wheeling diode



Typical turn-off characteristics of free wheeling diode



Typical thermistor resistance versus temperature