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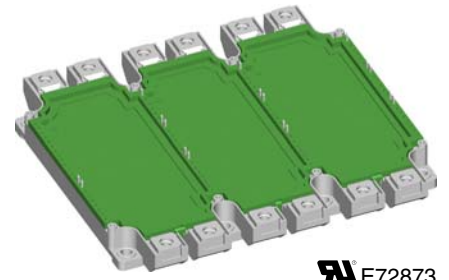
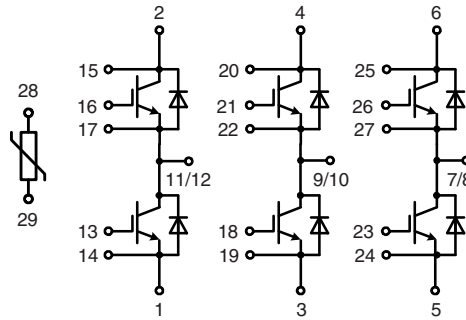
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# IXYS MWI 451-17 E9

## IGBT Modules Sixpack

$I_{C60} = 475 \text{ A}$   
 $V_{CES} = 1700 \text{ V}$   
 $V_{CE(sat) \text{ typ}} = 2.25 \text{ V}$

Preliminary data



E72873

See outline drawing for pin arrangement

### IGBTs

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C to } 125^{\circ}\text{C}$	1700	V
$V_{GES}$		$\pm 20$	V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$	580	A
$I_{C60}$	$T_C = 60^{\circ}\text{C}$	475	A
$I_{C80}$	$T_C = 80^{\circ}\text{C}$	405	A
<b>RBSOA</b>	$R_G = 3.3 \Omega$ ; $T_{VJ} = 125^{\circ}\text{C}$ Clamped inductive load; $L = 100 \mu\text{H}$	$I_{GM} = 750$ $V_{CEK} \leq V_{CES}$	A
<b><math>t_{SC}</math> (SCSOA)</b>	$V_{CE} = 1200 \text{ V}$ ; $V_{GE} = \pm 15 \text{ V}$ ; $R_G = 3.3 \Omega$ ; $T_{VJ} = 125^{\circ}\text{C}$ ; non-repetitive; $V_{CEmax} \leq V_{CES}$	10	$\mu\text{s}$
<b><math>P_{tot}</math></b>	$T_C = 25^{\circ}\text{C}$	2.2	kW

### Features

- NPT<sup>®</sup> IGBT technology
- low saturation voltage
- low switching losses
- square RBSOA, no latch up
- high short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- ultra fast free wheeling diodes
- solderable pins for PCB mounting
- package with copper base plate

### Advantages

- space savings
- reduced protection circuits
- package designed for wave soldering

### Typical Applications

- AC motor control
- AC servo and robot drives
- power supplies

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 450 \text{ A}$ ; $V_{GE} = 15 \text{ V}$ ; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.25	2.65	V
$V_{GE(th)}$	$I_C = 30 \text{ mA}$ ; $V_{GE} = V_{CE}$	5		7 V
$I_{CES}$	$V_{CE} = V_{CES}$ ; $V_{GE} = 0 \text{ V}$ ; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		9	1 mA 26 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ ; $V_{GE} = \pm 20 \text{ V}$			1.5 $\mu\text{A}$
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$ $E_{on}$ $E_{off}$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 900 \text{ V}$ ; $I_C = 450 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$ ; $R_G = 3.3 \Omega$		100	ns
			90	ns
			470	ns
			400	ns
			90	mJ
			90	mJ
$C_{ies}$	$V_{CE} = 25 \text{ V}$ ; $V_{GE} = 0 \text{ V}$ ; $f = 1 \text{ MHz}$		33	nF
$Q_{Gon}$	$V_{CE} = 900 \text{ V}$ ; $V_{GE} = 15 \text{ V}$ ; $I_C = 300 \text{ A}$		2.6	$\mu\text{C}$
$R_{thJC}$				0.057 K/W

**Recommended replacement:  
MWI 450-17T9**

IXYS reserves the right to change limits, test conditions and dimensions.

**Diodes**

Symbol	Conditions	Maximum Ratings	
$I_{F80}$	$T_C = 80^\circ\text{C}$	450	A
$I_{FRM}$	$t_p = 1 \text{ ms}$	900	A
$I^2t$	$T_{VJ} = 125^\circ\text{C}; t = 10 \text{ ms}; V_R = 0 \text{ V}$	35000	A <sup>2</sup> s

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 450 \text{ A}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$			2.2 V
$I_{RM}$	$I_F = 450 \text{ A}; di_F/dt = 3500 \text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}; V_R = 1200 \text{ V}$		400	A
$R_{thJC}$		0.075		K/W

**Temperature Sensor NTC**

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{25}$ $B_{25/50}$	$T = 25^\circ\text{C}$	4.75	5.0 3375	5.25 kΩ K

**Module**

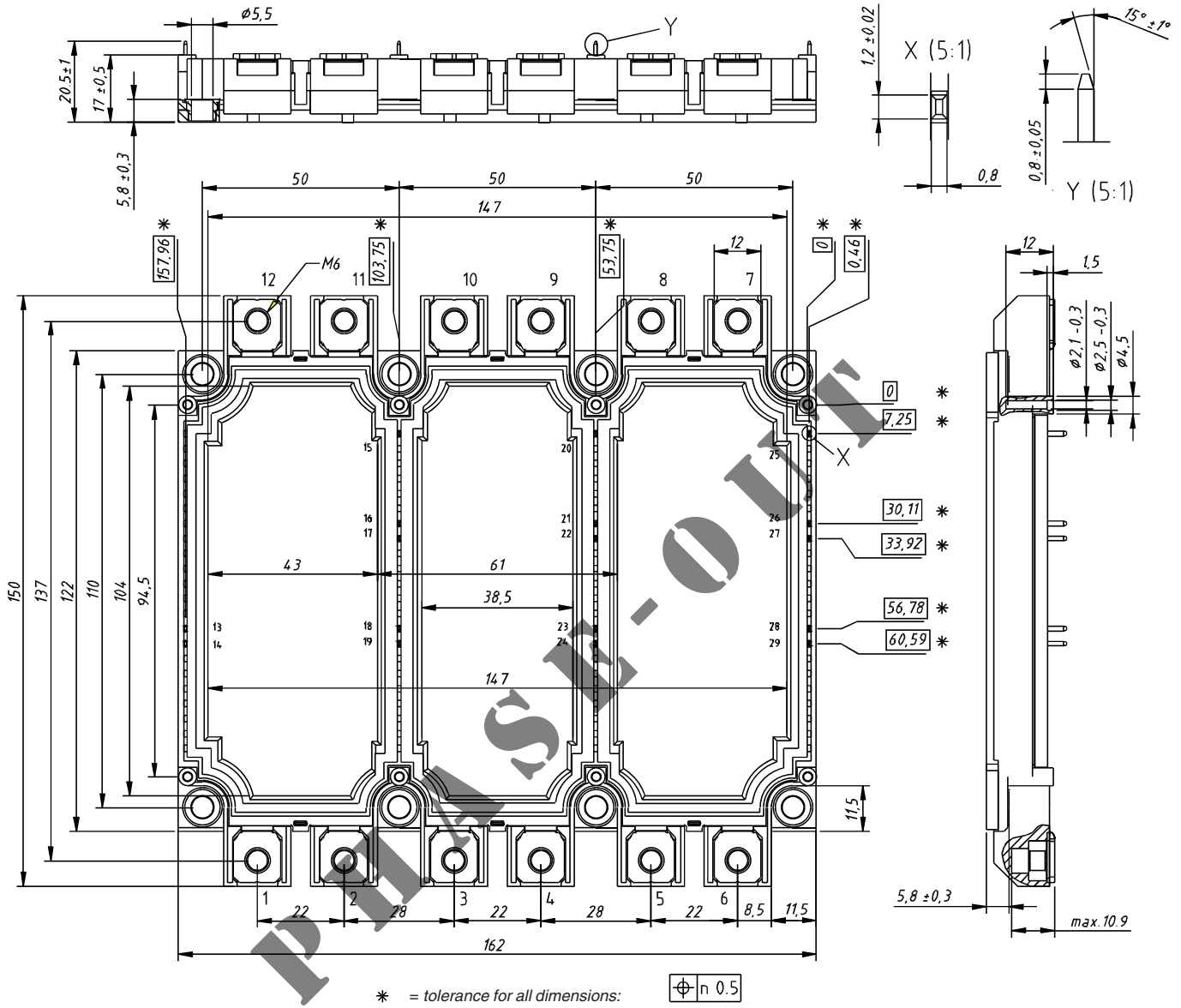
Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-40...+125	°C
$T_{JM}$		+150	°C
$T_{stg}$		-40...+125	°C
$V_{ISOL}$	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	3400	V~
$M_d$	Mounting torque (M5) Terminal connection torque (M6)	3 - 6 3 - 6	Nm Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{term-chip}^{*)}$	Resistance terminal to chip		0.55	mΩ
$d_s$	Creepage distance on surface	12.7		mm
$d_A$	Strike distance in air	10		mm
$R_{thCH}$	with heatsink compound		0.01	K/W
<b>Weight</b>			900	g

$$*) V = V_{CE(sat)} + 2x R_{term-chip} \cdot I_C \text{ resp. } V = V_F + 2x R_{term-chip} \cdot I_F$$

**IXYS** **MWI 451-17 E9**

Dimensions in mm (1 mm = 0.0394")



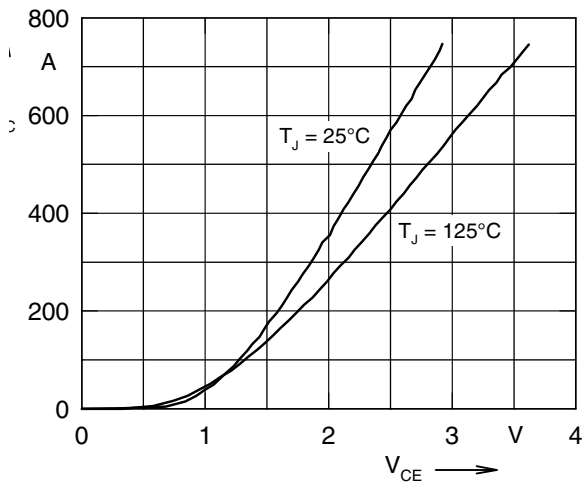


Fig. 1 Typ. output characteristics

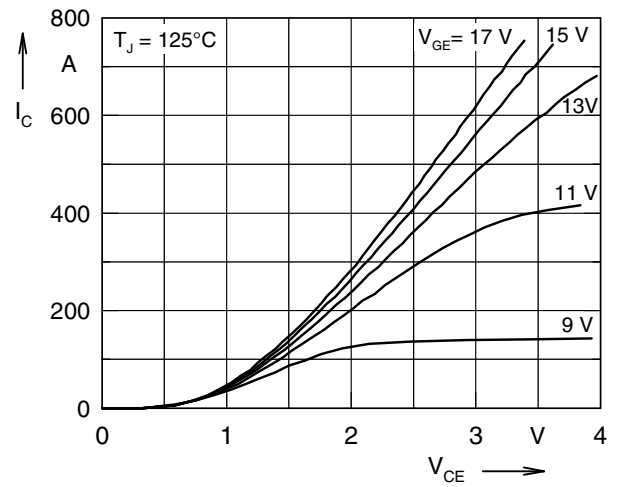


Fig. 2 Typ. output characteristics

PHASE-OUT