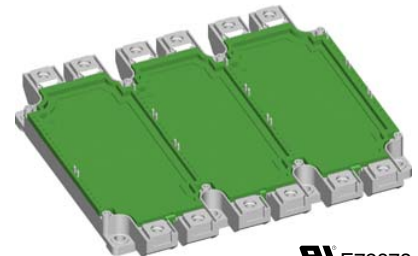
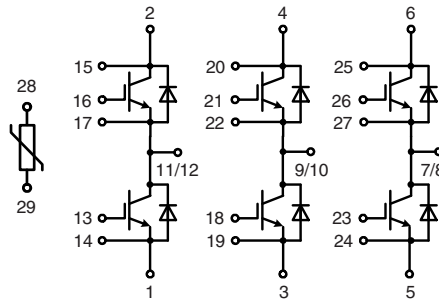


### IGBT Modules Sixpack

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

Preliminary data



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; $L = 100 \mu\text{H}$	$I_{CM} = 750$ $V_{CEK} \leq V_{CES}$ A
<b>t<sub>SC</sub> (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>P<sub>tot</sub></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 parallelling
- 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	2.65 3.0 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 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 90 470 400	ns ns ns ns	
			90 90	mJ 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.

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## 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	$\text{A}^2\text{s}$

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.
$R_{25}$	$T = 25^\circ\text{C}$	4.75	5.0	5.25 k $\Omega$
$B_{25/50}$			3375	K

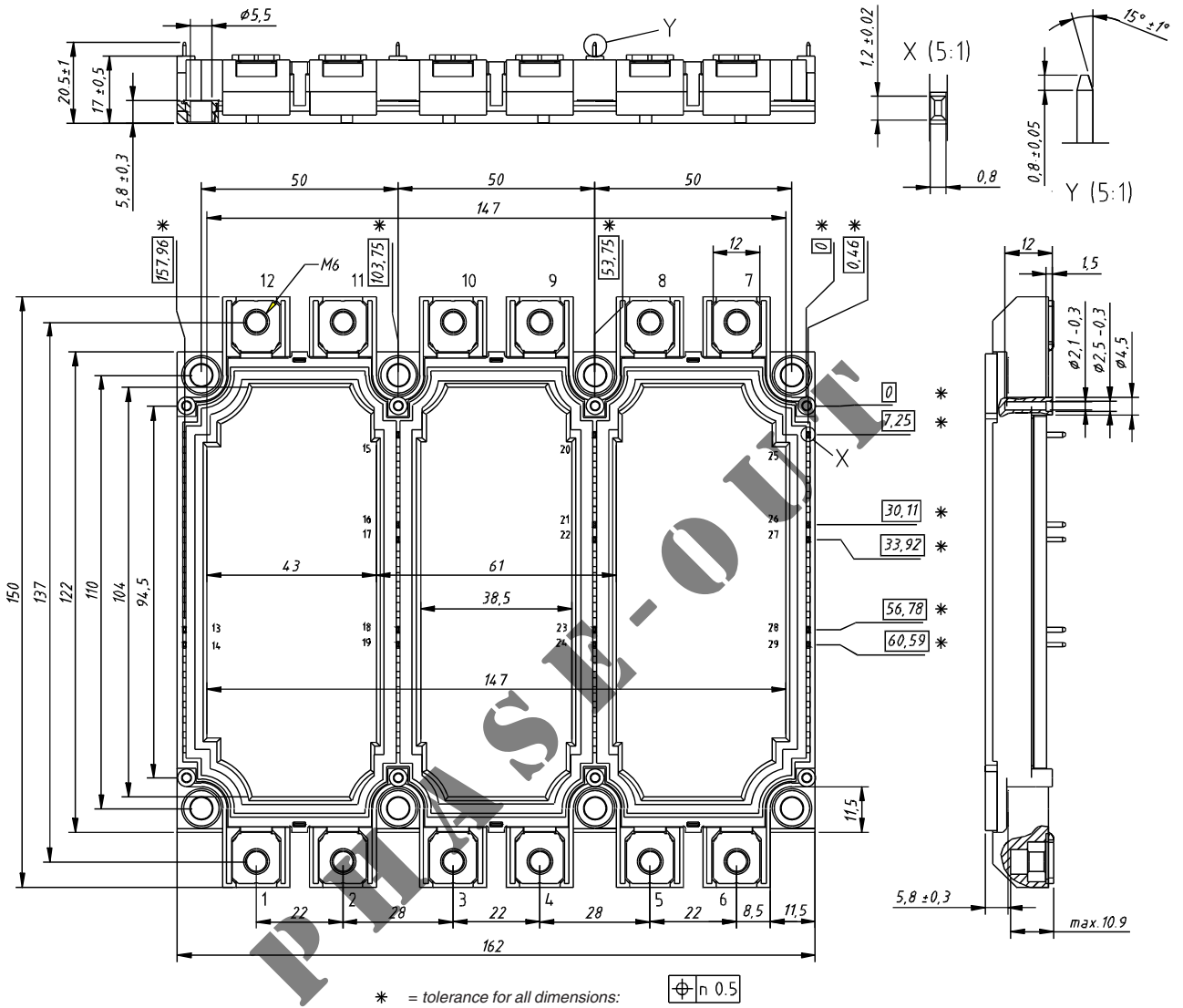
## Module

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

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{term-chip}^{*)}$	Resistance terminal to chip		0.55	m $\Omega$
$d_s$	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

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

Dimensions in mm (1 mm = 0.0394")



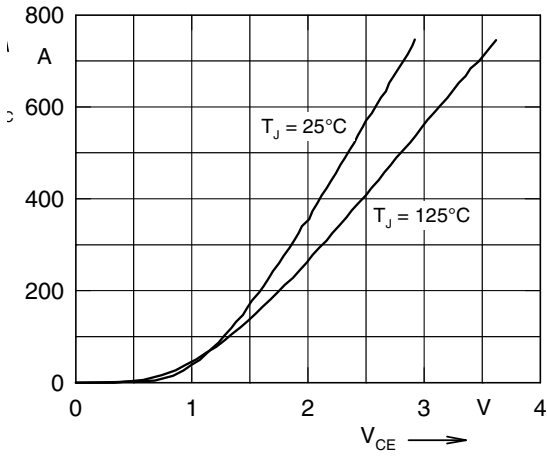


Fig. 1 Typ. output characteristics

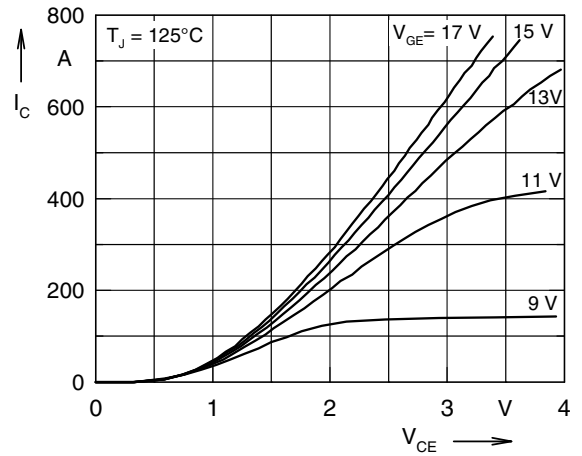


Fig. 2 Typ. output characteristics

PHASE-OUT