

IGBT Modules

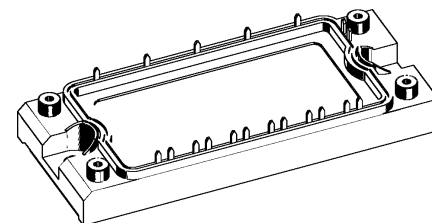
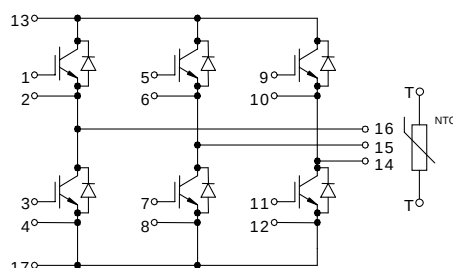
Sixpack

Short Circuit SOA Capability
Square RBSOA

$$\begin{aligned} I_{C25} &= 90 \text{ A} \\ V_{CES} &= 600 \text{ V} \\ V_{CE(sat) \text{ typ.}} &= 2.1 \text{ V} \end{aligned}$$

Preliminary Data

Type	NTC - Option
MWI 75-06 A7	without NTC
MWI 75-06 A7T	with NTC



IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	90	A
I_{C80}	$T_C = 80^{\circ}\text{C}$	60	A
RBSOA	$V_{GE} = \pm 15 \text{ V}$; $R_G = 18 \Omega$; $T_{VJ} = 125^{\circ}\text{C}$ Clamped inductive load; $L = 100 \mu\text{H}$	$I_{CM} = 120$ $V_{CEK} \leq V_{CES}$	A
t_{SC} (SCSOA)	$V_{CE} = V_{CES}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 18 \Omega$; $T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	280	W

Features

- NPT IGBT technology
- low saturation voltage
- low switching losses
- switching frequency up to 30 kHz
- 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

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Symbol Conditions Characteristic Values
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)

		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 75 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.1 2.5	2.6 V
$V_{GE(th)}$	$I_C = 1.5 \text{ mA}$; $V_{GE} = V_{CE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.9	1.3 mA
I_{GES}	$V_{CE} = 0 \text{ V}$; $V_{GE} = \pm 20 \text{ V}$			200 nA
$t_{d(on)}$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 300 \text{ V}$; $I_C = 75 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$; $R_G = 18 \Omega$		50	ns
t_r			50	ns
$t_{d(off)}$			270	ns
t_f			40	ns
E_{on}			3.5	mJ
E_{off}			2.5	mJ
C_{ies}	$V_{CE} = 25 \text{ V}$; $V_{GE} = 0 \text{ V}$; $f = 1 \text{ MHz}$		3200	pF
Q_{Gon}	$V_{CE} = 300 \text{ V}$; $V_{GE} = 15 \text{ V}$; $I_C = 75 \text{ A}$		190	nC
R_{thJC}	(per IGBT)			0.44 K/W

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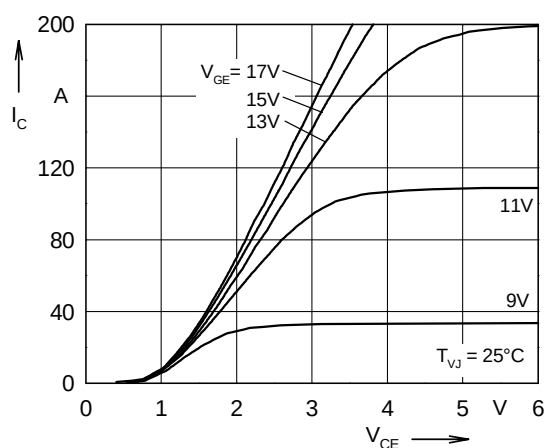


Fig. 1 Typ. output characteristics

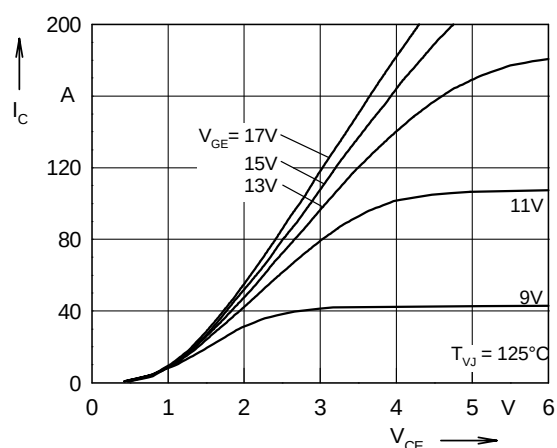


Fig. 2 Typ. output characteristics

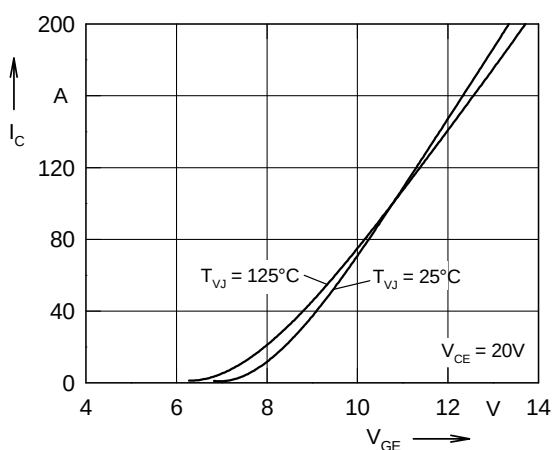


Fig. 3 Typ. transfer characteristics

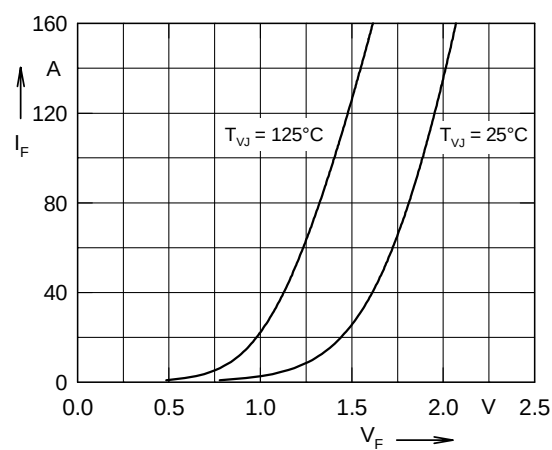


Fig. 4 Typ. forward characteristics of free wheeling diode

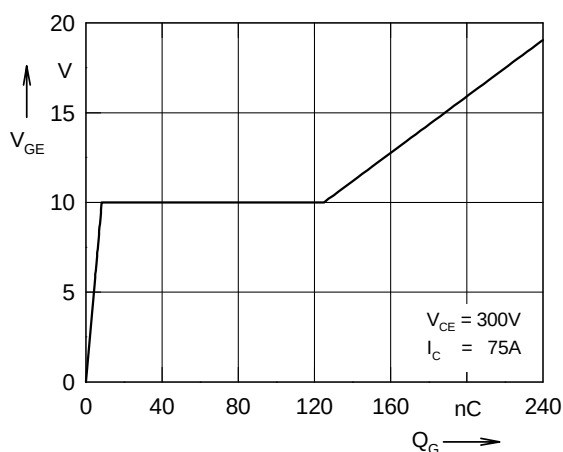


Fig. 5 Typ. turn on gate charge

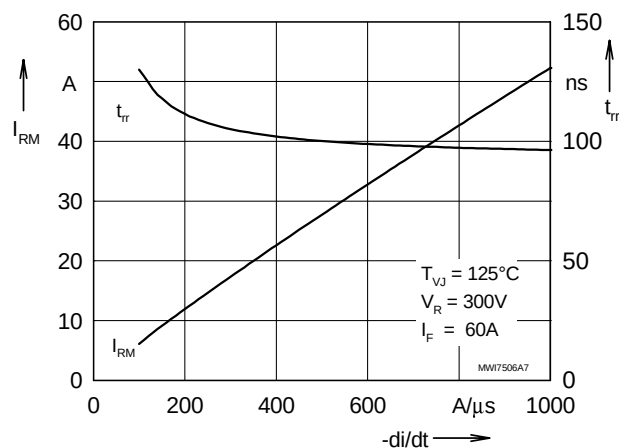


Fig. 6 Typ. turn off characteristics of free wheeling diode

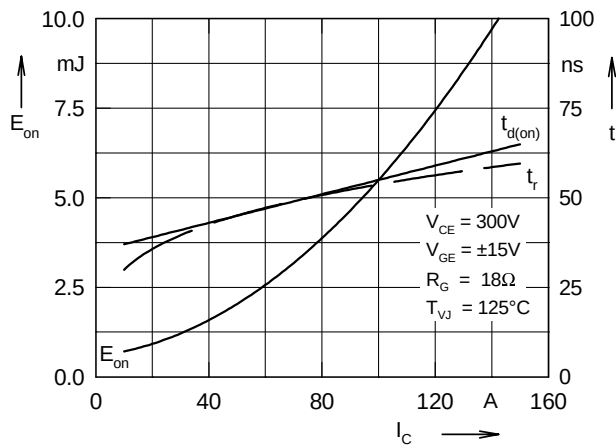


Fig. 7 Typ. turn on energy and switching times versus collector current

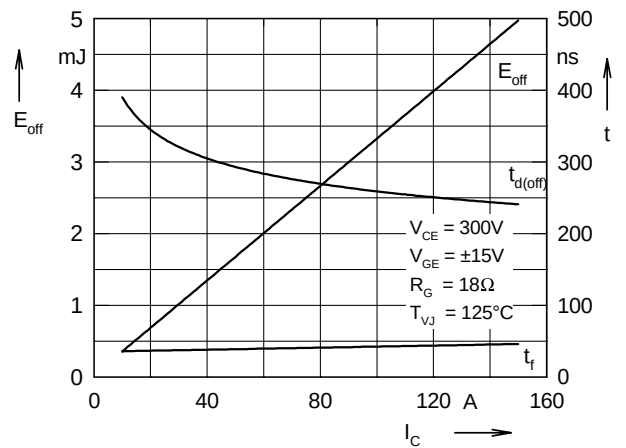


Fig. 8 Typ. turn off energy and switching times versus collector current

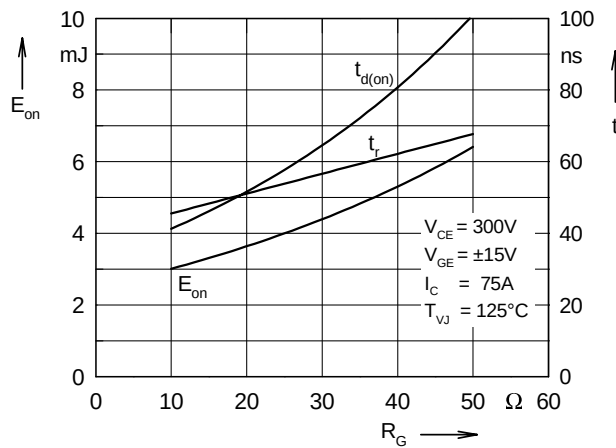


Fig. 9 Typ. turn on energy and switching times versus gate resistor

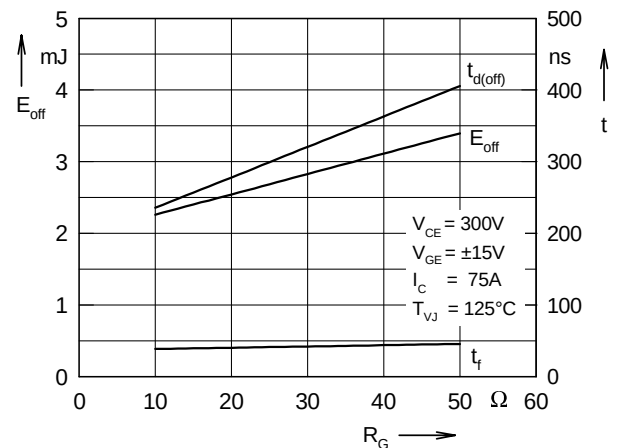


Fig. 10 Typ. turn off energy and switching times versus gate resistor

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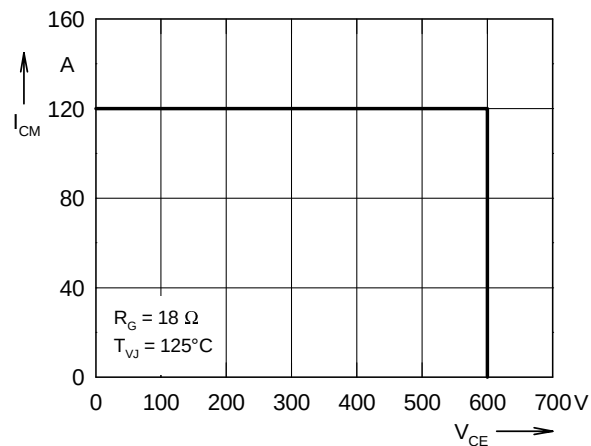


Fig. 11 Reverse biased safe operating area RBSOA

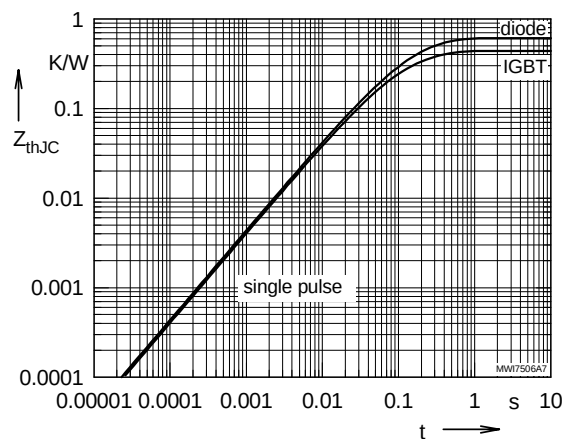


Fig. 12 Typ. transient thermal impedance