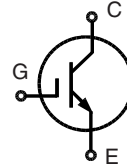
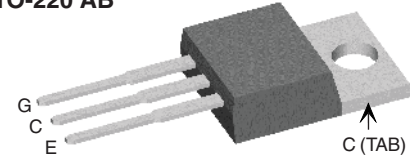


High Voltage IGBT with optional Diode

Replacement
IXYP20N65B3

V_{CES} = 600 V
I_{C25} = 32 A
V_{CE(sat) typ} = 2.2 V

High Speed,
Low Saturation Voltage


TO-220 AB


G = Gate, E = Emitter
 C = Collector, TAB = Collector

Symbol	Conditions	Maximum Ratings	
V_{CES}	T _J = 25°C to 150°C	600	V
V_{CGR}	T _J = 25°C to 150°C; R _{GE} = 20 kΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T _C = 25°C	32	A
I_{C90}	T _C = 90°C	20	A
I_{CM}	T _C = 90°C, t _p = 1 ms	40	A
RBSOA	V _{GE} = ±15 V, T _J = 125°C, R _G = 22 Ω Clamped inductive load, L = 30 μH	I _{CM} = 60 V _{CEK} < V _{CES}	A
t_{SC} (SCSOA)	V _{GE} = ±15 V, V _{CE} = 600 V, T _J = 125°C R _G = 22 Ω, non repetitive	10	μs
P_C	T _C = 25°C	IGBT	140 W
		Diode	50 W
T_J		-55 ... +150	°C
T_{stg}		-40 ... +150	°C
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	°C
M_d	Mounting torque	0.4 - 0.6	Nm
Weight		2	g

Features

- NPT IGBT technology
- low switching losses
- low tail current
- no latch up
- short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- optional ultra fast diode
- International standard package

Advantages

- Space savings
- High power density

Typical Applications

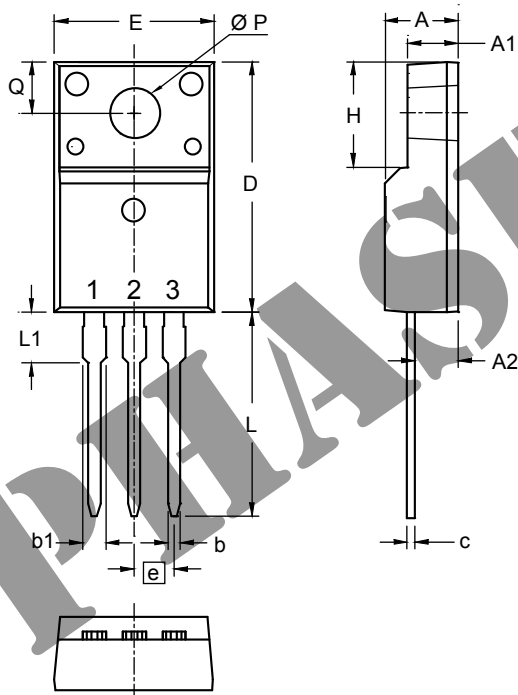
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Symbol	Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V_{(BR)CES}	V _{GE} = 0 V	600		V
V_{GE(th)}	I _C = 0.4 mA, V _{CE} = V _{GE}	3		5 V
I_{CES}	V _{CE} = V _{CES}	T _J = 25°C		0.1 mA
		T _J = 125°C	0.7	mA
I_{GES}	V _{CE} = 0 V, V _{GE} = ±20 V			± 500 nA
V_{CE(sat)}	I _C = 20 A, V _{GE} = 15 V	2.2	2.8	V

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

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Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		800	pF
C_{oes}			85	pF
C_{res}			50	pF
Q_g	$I_C = 20\text{ A}, V_{GE} = 15\text{ V}, V_{CE} = 480\text{ V}$		70	nC
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 20\text{ A}, V_{GE} = \pm 15\text{ V},$ $V_{CE} = 300\text{ V}, R_G = 22\ \Omega$		25	ns
t_r			30	ns
$t_{d(off)}$			260	ns
t_f			55	ns
E_{on}			0.9	mJ
E_{off}			0.4	mJ
R_{thJC}	Package with heatsink compound	0.5		0.9 K/W
R_{thCH}				K/W
R_{thCK}	Package with heatsink compound		0.25	K/W



TO-220 AB Outline

Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
ØP	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134

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

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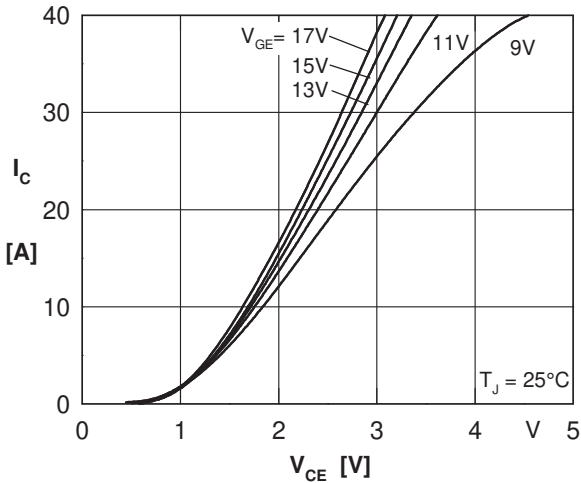


Fig. 1 Typ. output characteristics

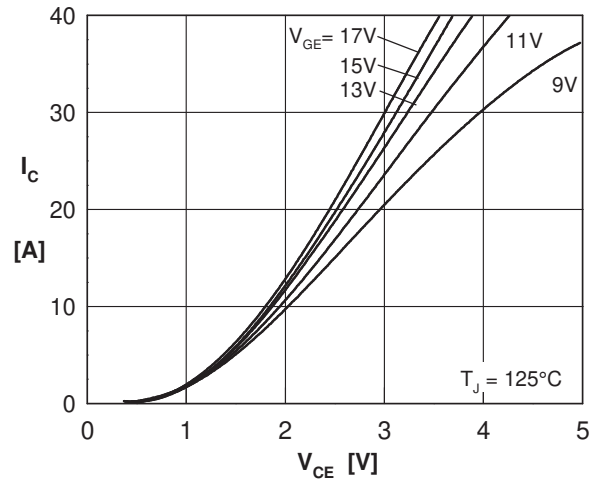


Fig. 2 Typ. output characteristics

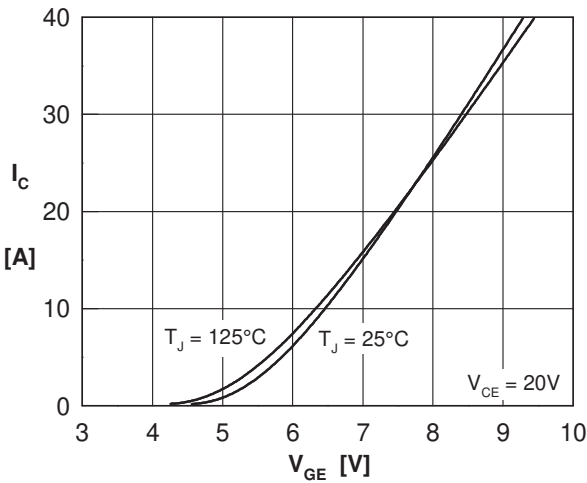


Fig. 3 Typ. transfer characteristics

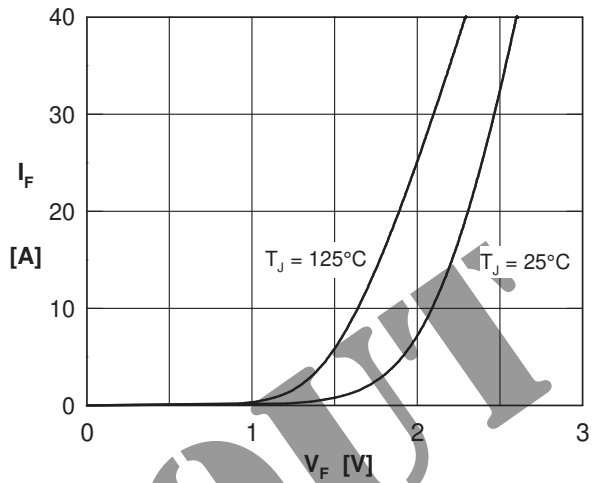


Fig. 4 Typ. forward characteristics of free wheeling diode

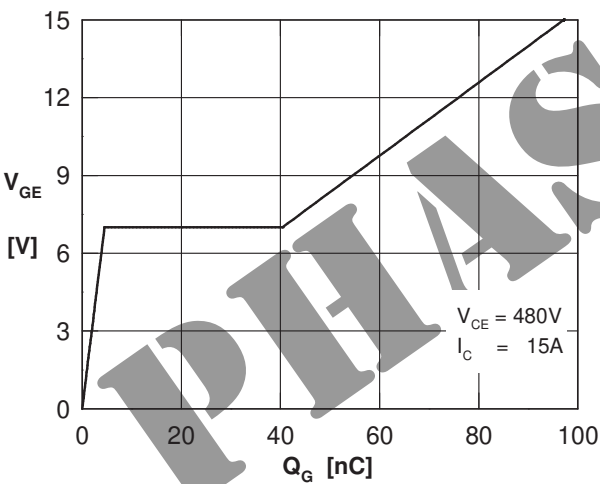


Fig. 5 Typ. turn on gate charge

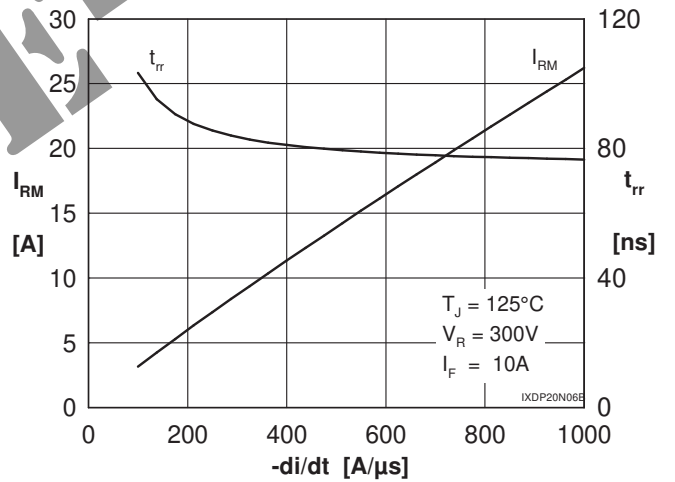


Fig. 6 Typ. turn off characteristics of free wheeling diode

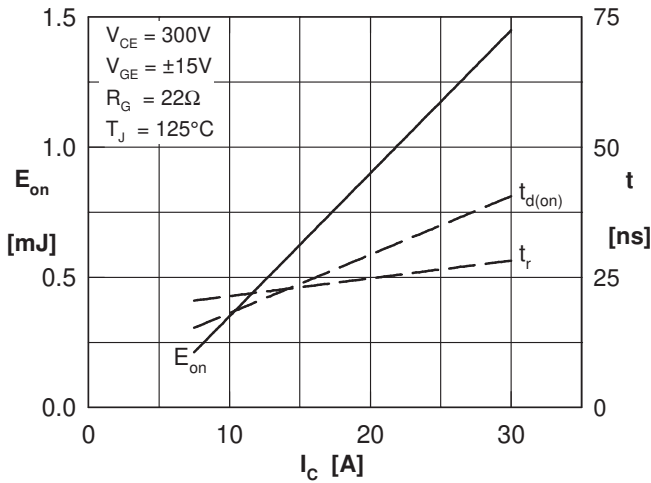


Fig. 7 Typ. turn on energy and switching times versus collector current

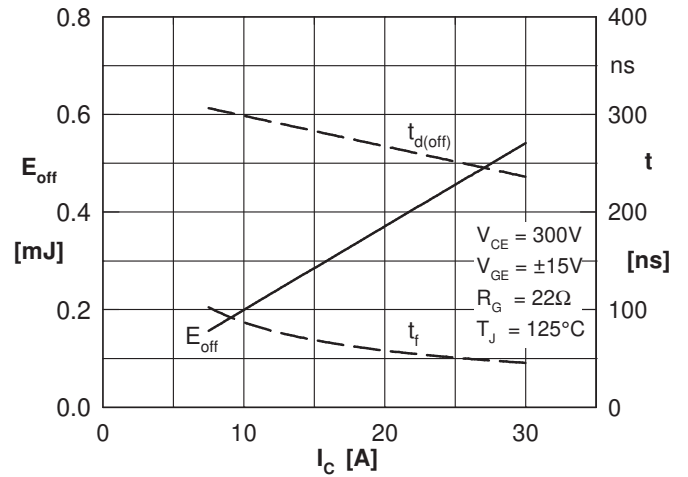


Fig. 8 Typ. turn off energy and switching times versus collector current

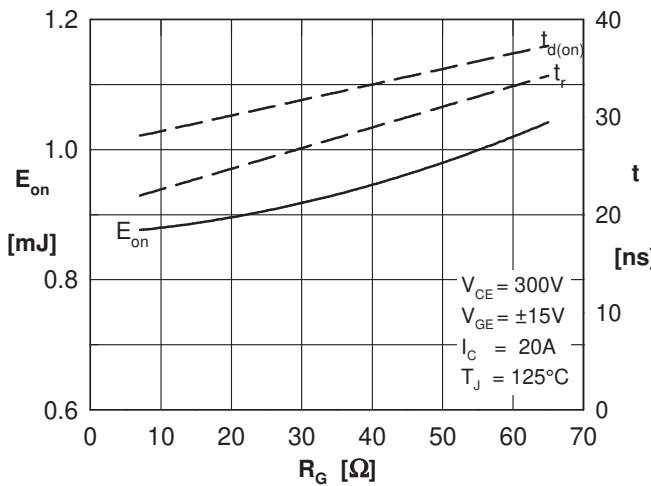


Fig. 9 Typ. turn on energy and switching times versus gate resistor

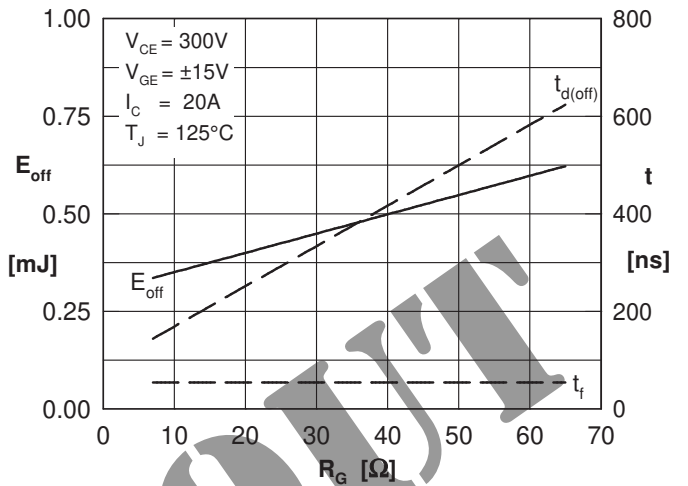


Fig. 10 Typ. turn off energy and switching times versus gate resistor

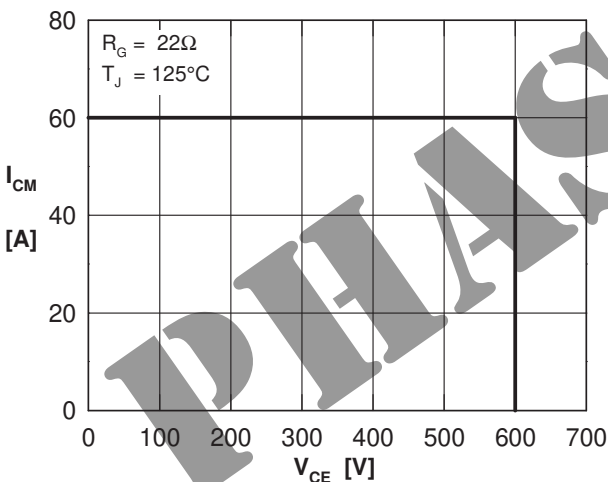


Fig. 5 Typ. turn on gate charge

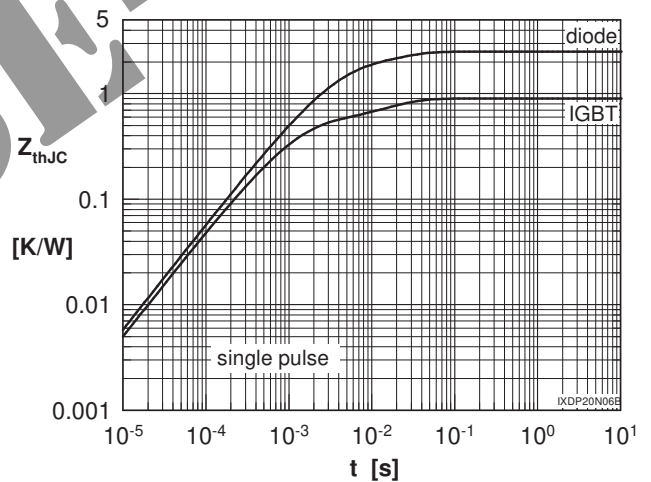


Fig. 6 Typ. turn off characteristics of free wheeling diode