

# IGBT with optional Diode

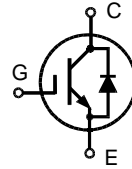
## IXDR 35N60 BD1

$$V_{CES} = 600 \text{ V}$$

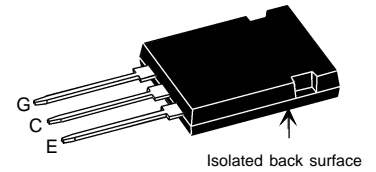
$$I_{C25} = 38 \text{ A}$$

$$V_{CE(sat)typ} = 2.2 \text{ V}$$

High Speed,  
Low Saturation Voltage



### ISOPLUS 247™



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

\* Patent pending

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 20 \text{ k}\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	38	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	24	A
$I_{CM}$	$T_C = 90^\circ\text{C}, t_p = 1 \text{ ms}$	48	A
<b>RBSOA</b>	$V_{GE} = \pm 15 \text{ V}, T_J = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 110$ $V_{CEK} < V_{CES}$	A
<b><math>t_{SC}</math> (SCSOA)</b>	$V_{GE} = \pm 15 \text{ V}, V_{CE} = 600 \text{ V}, T_J = 125^\circ\text{C}$ $R_G = 10 \Omega$ , non repetitive	10	$\mu\text{s}$
<b><math>P_C</math></b>	$T_C = 25^\circ\text{C}$	IGBT	125 W
		Diode	50 W
<b><math>T_J</math></b>		-55 ... +150	$^\circ\text{C}$
<b><math>T_{stg}</math></b>		-55 ... +150	$^\circ\text{C}$
<b><math>V_{ISOL}</math></b>	50/60 Hz RMS; $I_{ISOL} \leq 1 \text{ mA}$	2500	V~
<b><math>F_C</math></b>	mounting force with clip	20...120	N
<b>Weight</b>	typical	6	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
- Epoxy meets UL 94V-0
- Isolated and UL registered E153432

### Advantages

- DCB Isolated mounting tab
- Meets TO-247AD package Outline
- Package for clip or spring mounting
- 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 ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{(BR)CES}$	$V_{GE} = 0 \text{ V}$	600		V
$V_{GE(th)}$	$I_C = 0.7 \text{ mA}, V_{CE} = V_{GE}$	3		5 V
$I_{CES}$	$V_{CE} = V_{CES}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		1	0.1 mA mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = 35 \text{ A}, V_{GE} = 15 \text{ V}$	2.2	2.7	V



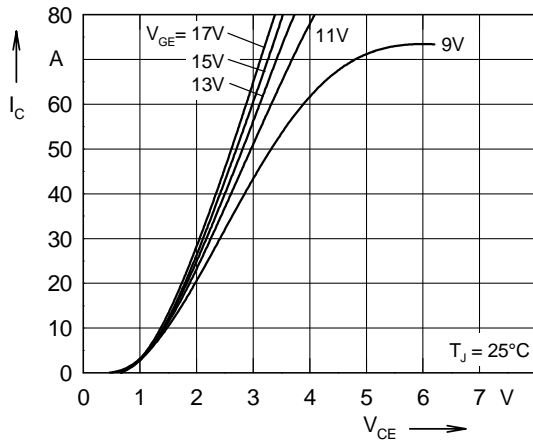


Fig. 1 Typ. output characteristics

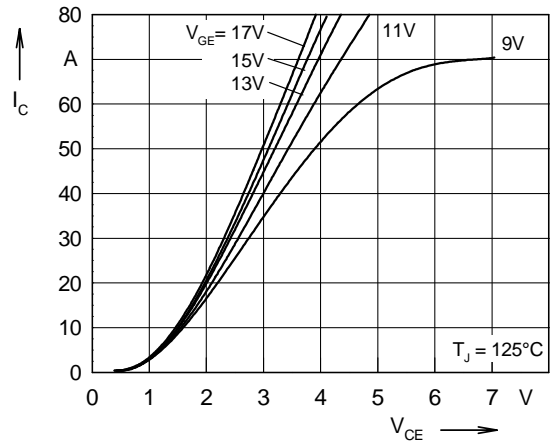


Fig. 2 Typ. output characteristics

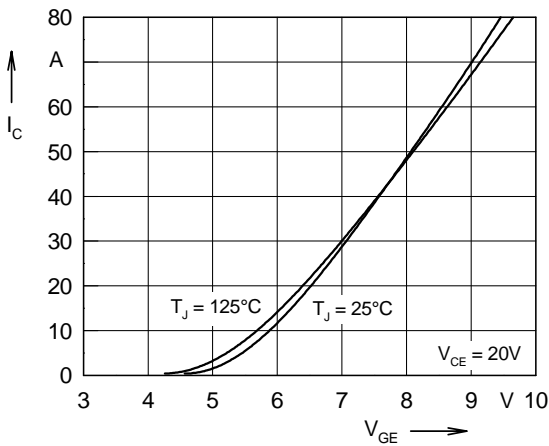


Fig. 3 Typ. transfer characteristics

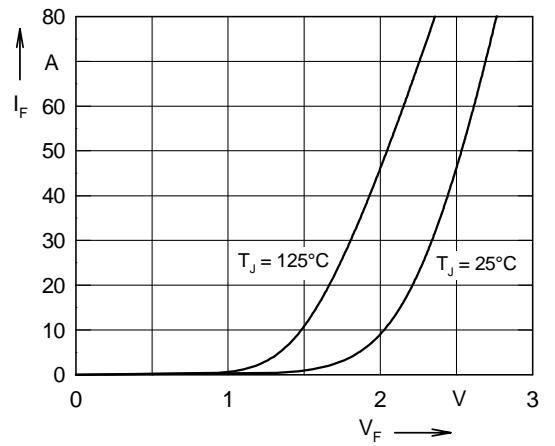


Fig. 4 Typ. forward characteristics of free wheeling diode

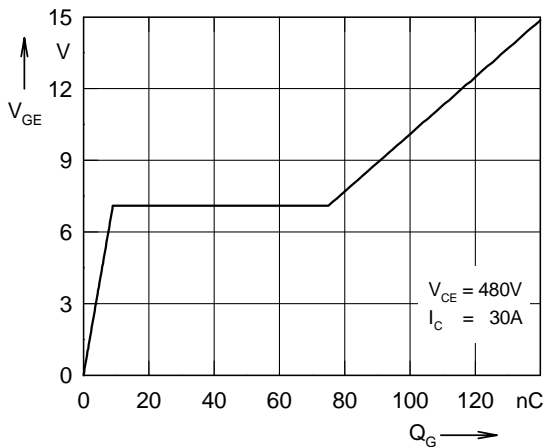


Fig. 5 Typ. turn on gate charge

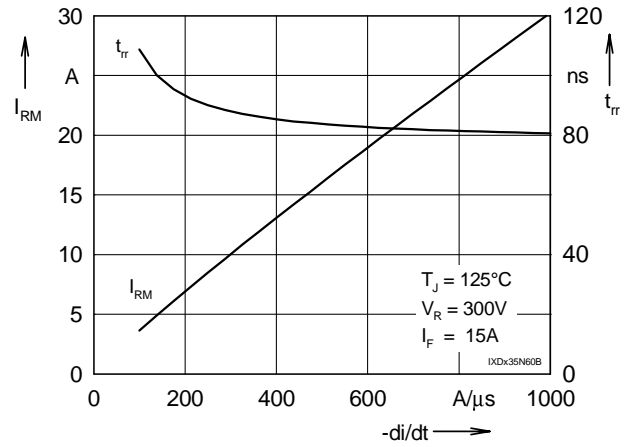


Fig. 6 Typ. turn off characteristics of free wheeling diode

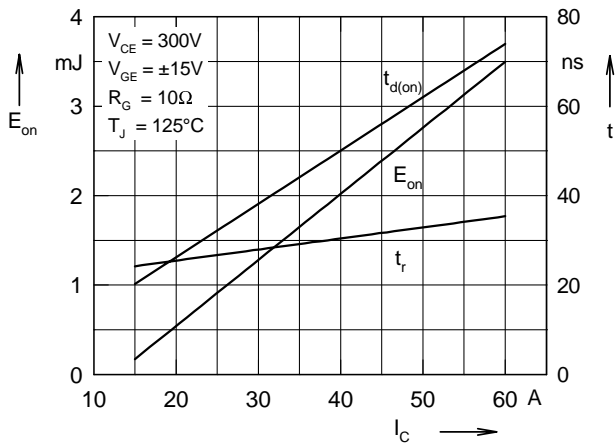


Fig. 7 Typ. turn on energy and switching times versus collector current

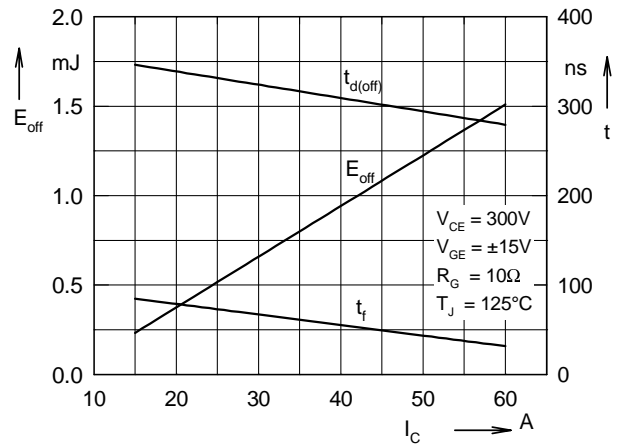


Fig. 8 Typ. turn off energy and switching times versus collector current

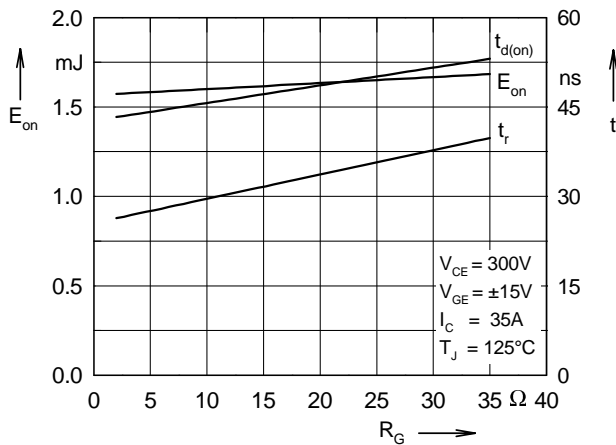


Fig. 9 Typ. turn on energy and switching times versus gate resistor

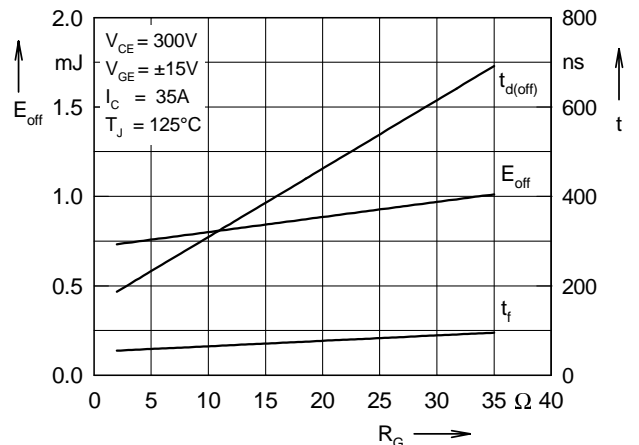


Fig.10 Typ. turn off energy and switching times versus gate resistor

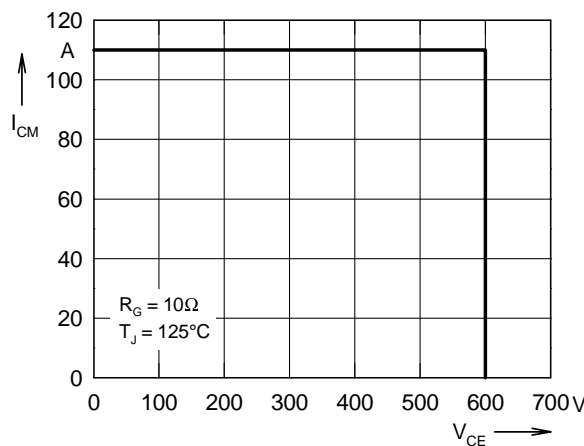


Fig. 11 Reverse biased safe operating area RBSOA

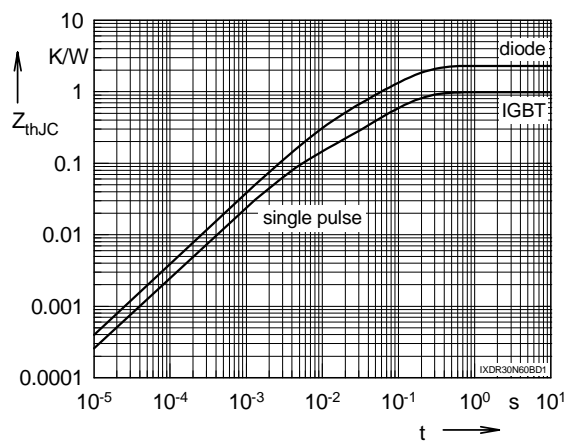


Fig. 12 Typ. transient thermal impedance