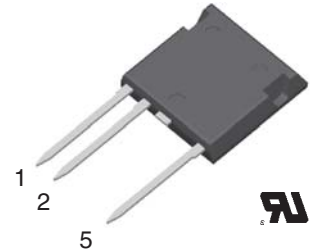
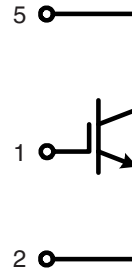


# High Voltage IGBT

in High Voltage  
ISOPLUS i4-PAC™

$I_{C25} = 32 \text{ A}$   
 $V_{CES} = 2500 \text{ V}$   
 $V_{CE(sat)} = 3.2 \text{ V}$   
 $t_f = 250 \text{ ns}$



## IGBT

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$	2500	V
$V_{GES}$		$\pm 20$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	32	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	19	A
$I_{CM}$	$V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^\circ\text{C}$	70	A
$V_{CEK}$	RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	1200	V
$P_{tot}$	$T_C = 25^\circ\text{C}$	250	W

## Features

- High Voltage IGBT
  - substitute for high voltage MOSFETs with significantly lower voltage drop and comparable switching speed
  - substitute for high voltage thyristors with voltage control of turn on & turn off
  - substitute for electromechanical trigger and discharge relays
- ISOPLUS i4-PAC™ high voltage package
  - isolated back surface
  - enlarged creepage towards heatsink
  - enlarged creepage between high voltage pins
  - application friendly pinout
  - high reliability
  - industry standard outline
  - UL registered E72873

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 19 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		3.2 4.7	V V	
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{CE}$	5		8 V	
$I_{CES}$	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		0.2	0.15 mA mA	
$I_{GES}$	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			500 nA	
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$ $E_{on}$ $E_{off}$	Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 1500 \text{ V}; I_C = 19 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega$		100 50 600 250 15 30	ns ns ns ns mJ mJ	
$C_{ies}$ $C_{oes}$ $C_{res}$		$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		2.28 103 43	nF pF pF
$Q_{Gon}$			$V_{CE} = 1500 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 19 \text{ A}$	142	nC
$R_{thJC}$					0.5 K/W

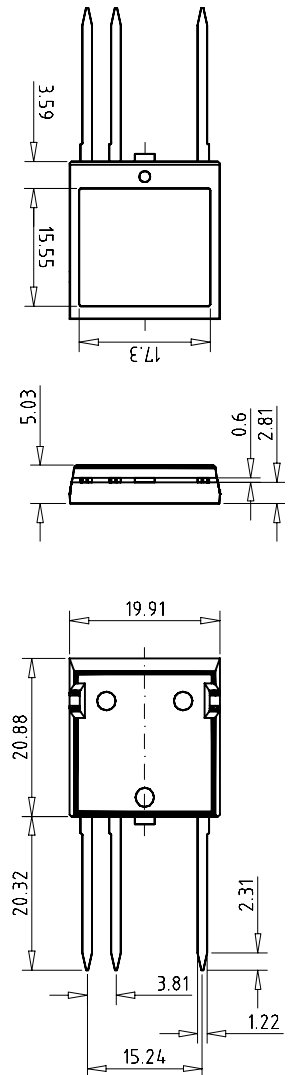
## Applications

- switched mode power supplies
- DC-DC converters
- resonant converters
- laser generators, x ray generators
- discharge circuits

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$		-55...+150	°C
$T_{stg}$		-55...+125	°C
$V_{ISOL}$	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	2500	V~
$F_c$	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$d_s, d_A$	C pin - E pin	7.0		mm
$d_s, d_A$	pin - backside metal	5.5		mm
$R_{thCH}$	with heatsink compound		0.15	K/W
<b>Weight</b>			9	g

**Dimensions in mm (1 mm = 0.0394")**


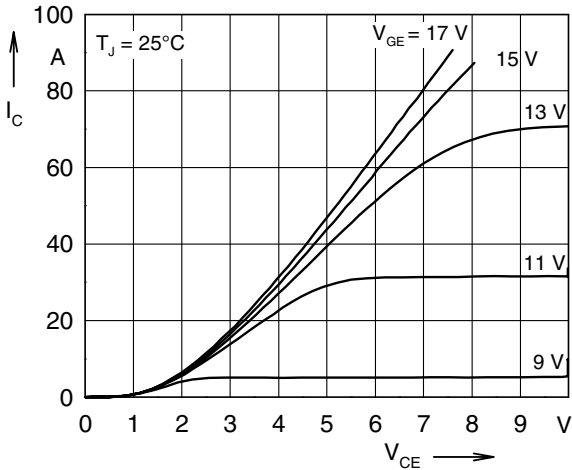


Fig. 1 Typ. Output Characteristics

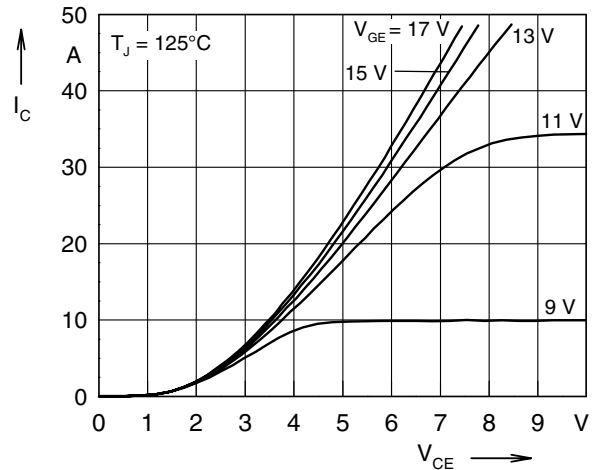


Fig. 2 Typ. Output Characteristics

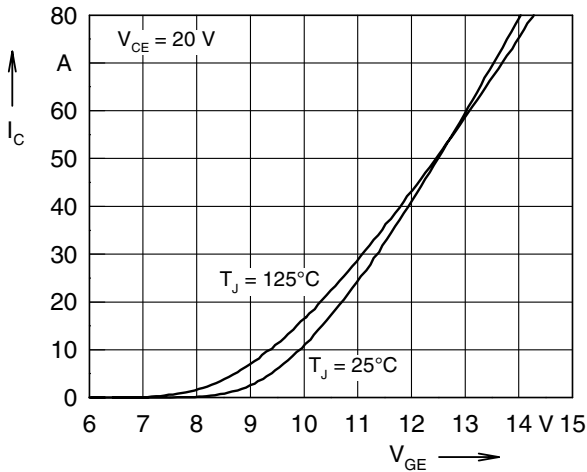


Fig. 3 Typ. Transfer Characteristics

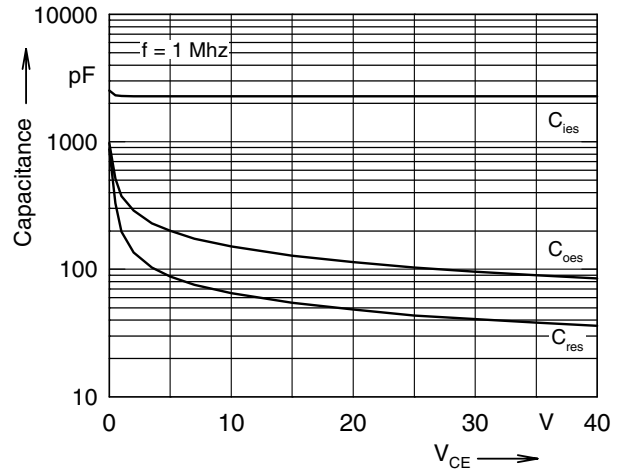


Fig. 4 Capacitance curves

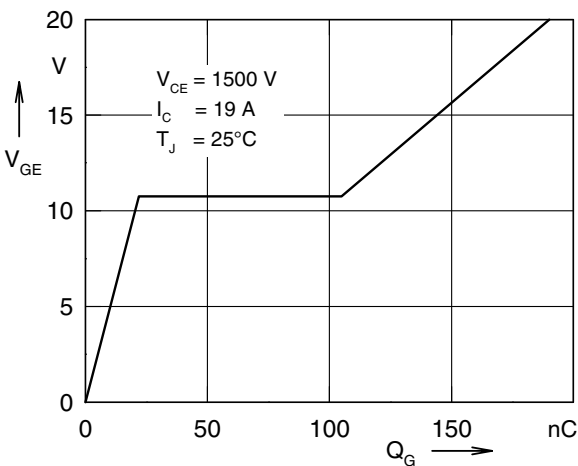


Fig. 5 Typ. Gate Charge characteristics

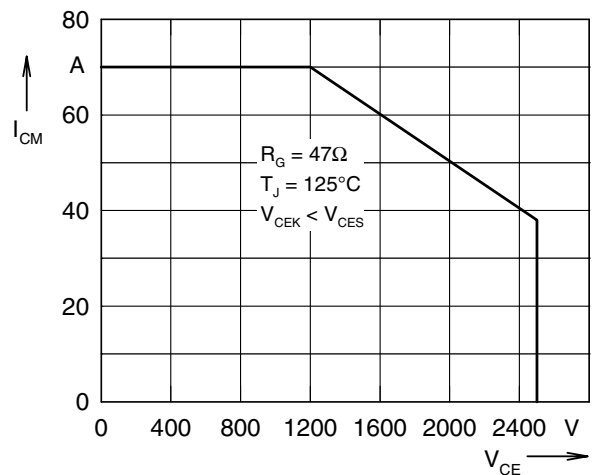


Fig. 6 Reverse Biased Safe Operating Area RBSOA

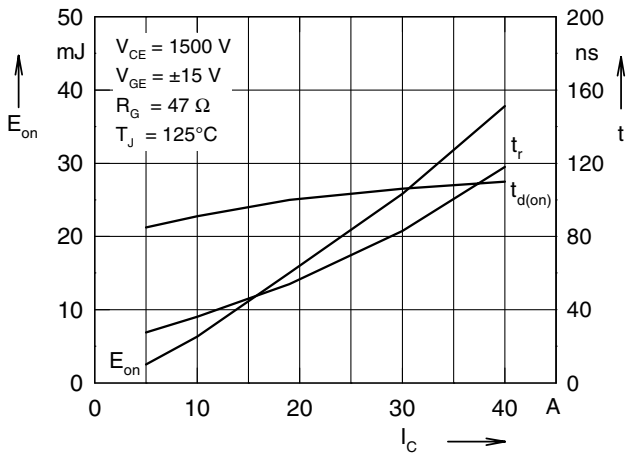


Fig. 7 Typ. turn on energy and switching times versus collector current

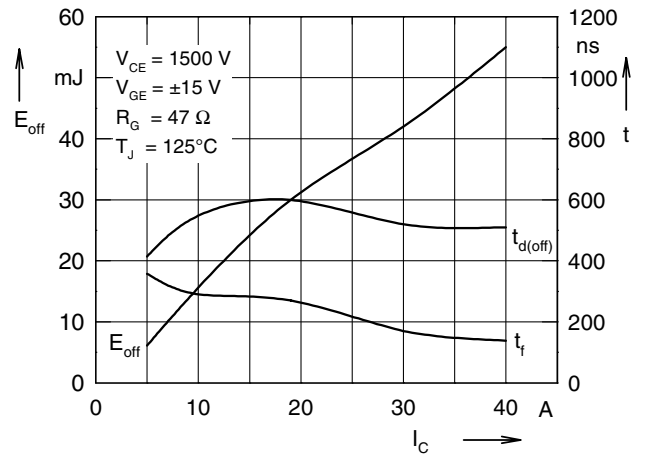


Fig. 8 Typ. turn off energy and switching times versus collector current

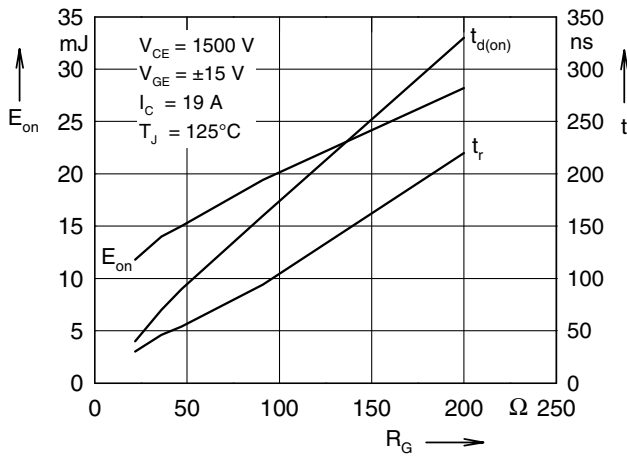


Fig. 9 Typ. turn on energy and switching times versus gate resistor

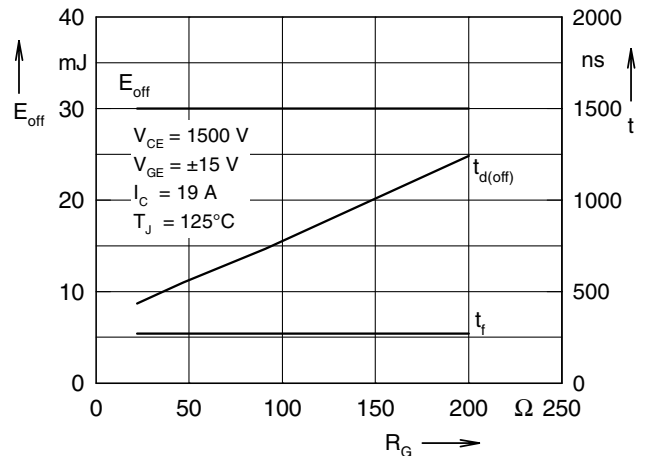


Fig. 10 Typ. turn off energy and switching times versus gate resistor

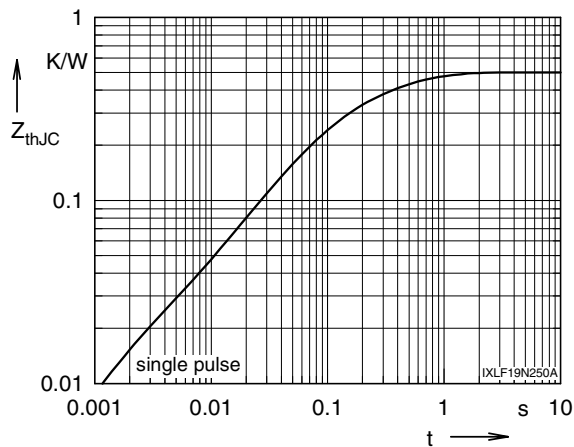


Fig. 11 Typ. transient thermal impedance



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[IKP20N60TXKSA1](#) [IHW20N65R5XKSA1](#)