

High Voltage IGBT

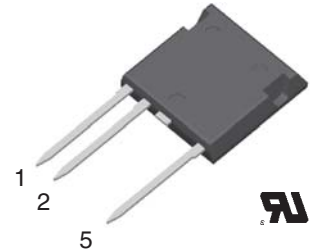
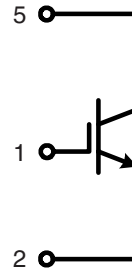
in High Voltage
ISOPLUS i4-PAC™

$$I_{C25} = 32 \text{ A}$$

$$V_{CES} = 2500 \text{ V}$$

$$V_{CE(sat)} = 3.2 \text{ V}$$

$$t_f = 250 \text{ ns}$$



IGBT

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	2500	V
V_{GES}		± 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

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	3.9 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}			2.28 103 43	nF pF pF
Q_{Gon}			142	nC
R_{thJC}				0.5 K/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

Applications

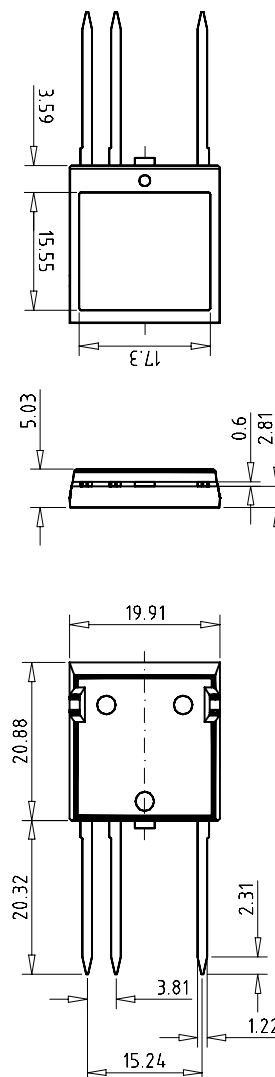
- switched mode power supplies
- DC-DC converters
- resonant converters
- laser generators, x ray generators
- discharge circuits

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
Weight			9	g

Dimensions in mm (1 mm = 0.0394")



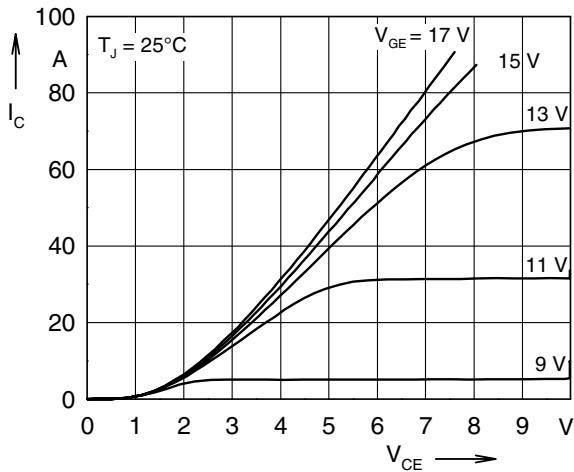


Fig. 1 Typ. Output Characteristics

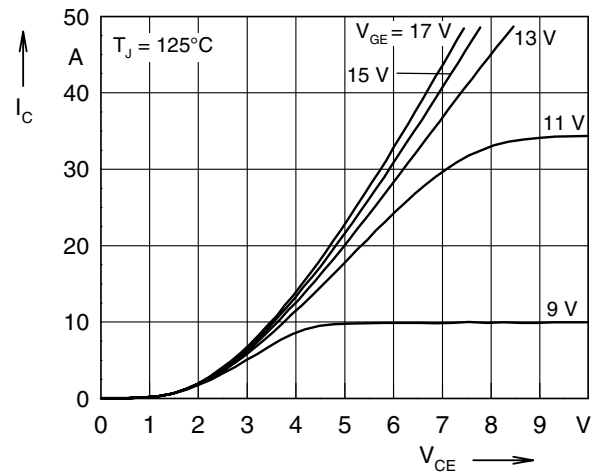


Fig. 2 Typ. Output Characteristics

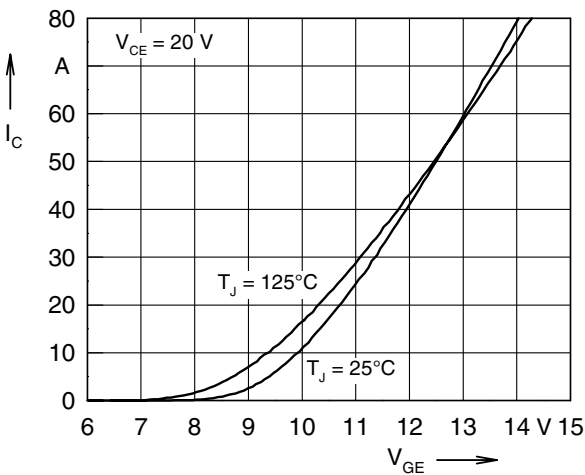


Fig. 3 Typ. Transfer Characteristics

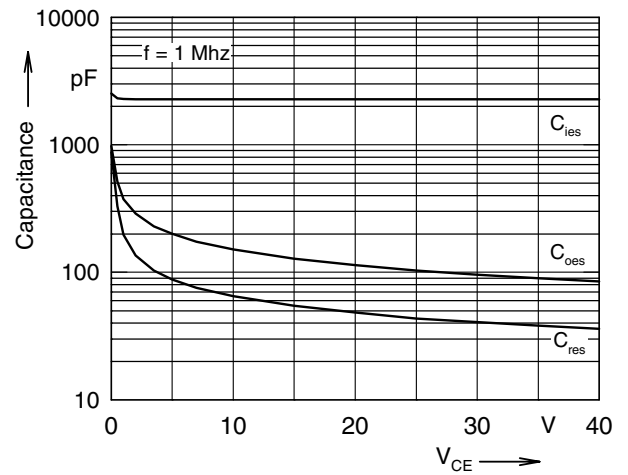


Fig. 4 Capacitance curves

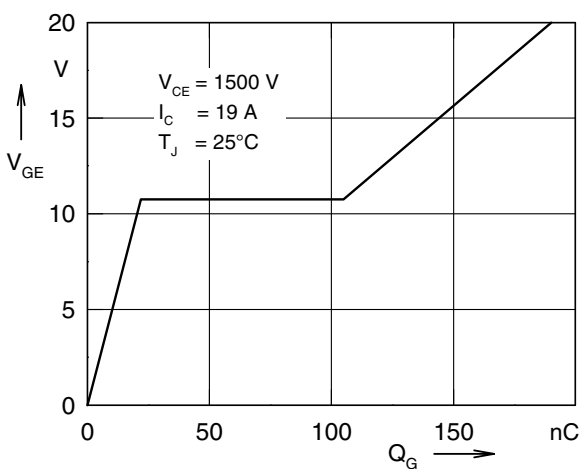


Fig. 5 Typ. Gate Charge characteristics

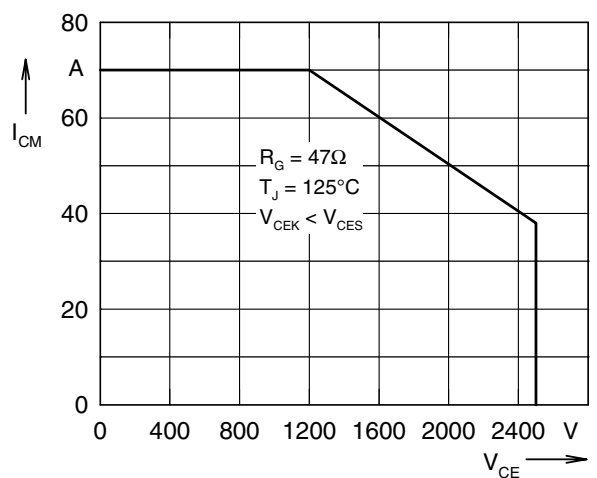


Fig. 6 Reverse Biased Safe Operating Area RBSOA

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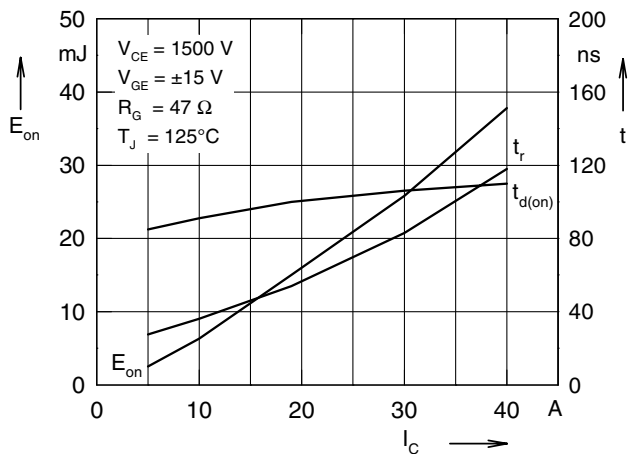


Fig. 7 Typ. turn on energy and switching times versus collector current

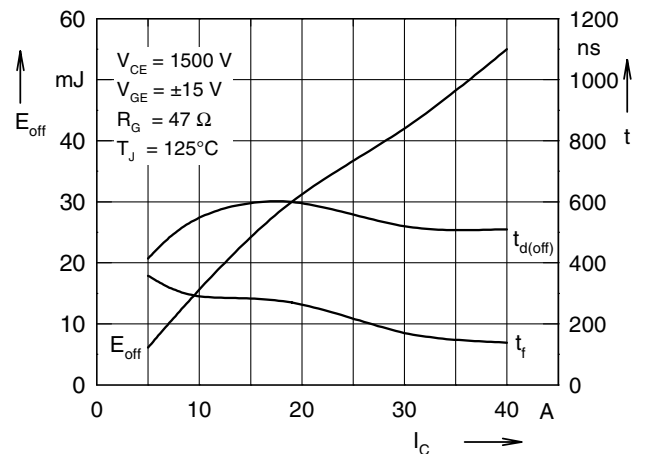


Fig. 8 Typ. turn off energy and switching times versus collector current

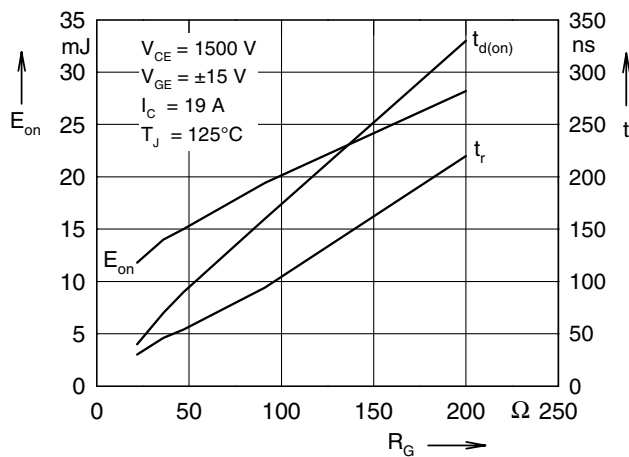


Fig. 9 Typ. turn on energy and switching times versus gate resistor

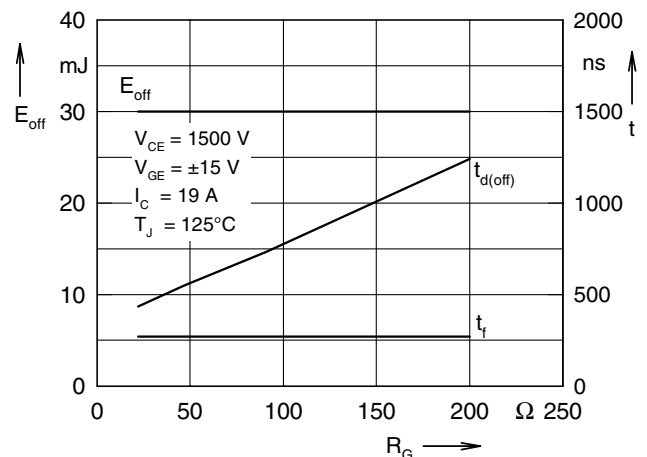


Fig. 10 Typ. turn off energy and switching times versus gate resistor

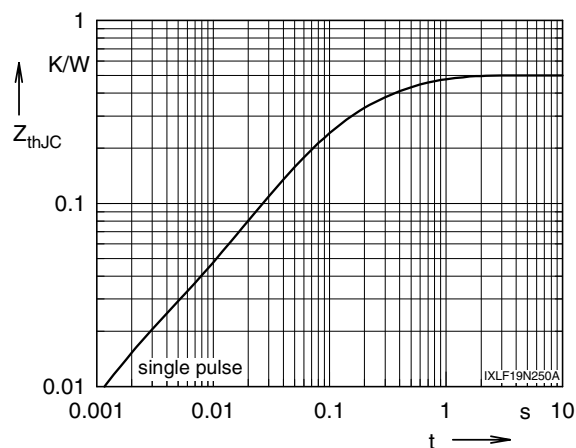


Fig. 11 Typ. transient thermal impedance



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