

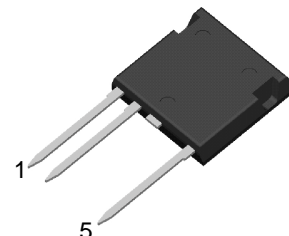
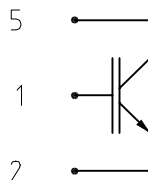
# High Voltage BIMOSFET™

in High Voltage  
ISOPLUS i4-PAC™

**IXBF 9N140**  
**IXBF 9N160**

**$I_{C25}$  = 7 A**  
 **$V_{CES}$  = 1400/1600 V**  
 **$V_{CE(sat)}$  = 4.9V**  
 **$t_f$  = 40 ns**

Monolithic Bipolar MOS Transistor



## IGBT

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C}$ to $150^{\circ}\text{C}$	IXBF 9N140 IXBF 9N160	1400 1600 V
$V_{GES}$			$\pm 20$ V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$		7 A
$I_{C90}$	$T_C = 90^{\circ}\text{C}$		4 A
$I_{CM}$ $V_{CEK}$	$V_{GE} = 15/0$ V; $R_G = 100$ $\Omega$ ; $T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100$ $\mu\text{H}$		12 A
		$0.8V_{CES}$	
$P_{tot}$	$T_C = 25^{\circ}\text{C}$		70 W

## Features

- High Voltage BIMOSFET™
  - substitute for high voltage MOSFETs with significantly lower voltage drop
  - fast switching for high frequency operation
  - reverse conduction capability
- 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

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 5$ A; $V_{GE} = 15$ V; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		4.9 5.6	7 V V	
$V_{GE(th)}$	$I_C = 0.5$ mA; $V_{GE} = V_{CE}$	4		8 V	
$I_{CES}$	$V_{CE} = 0.8V_{CES}$ ; $V_{GE} = 0$ V; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.1	0.1 mA mA	
$I_{GES}$	$V_{CE} = 0$ V; $V_{GE} = \pm 20$ V			500 nA	
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 960$ V; $I_C = 5$ A $V_{GE} = 15/0$ V; $R_G = 100$ $\Omega$		200 60 180 40	ns ns ns ns	
$C_{ies}$		$V_{CE} = 25$ V; $V_{GE} = 0$ V; $f = 1$ MHz		550	pF
$Q_{Gon}$		$V_{CE} = 600$ V; $V_{GE} = 15$ V; $I_C = 7$ A		44	nC
$V_F$		(reverse conduction); $I_F = 5$ A		3.6	V
$R_{thJC}$				1.75 K/W	

## Applications

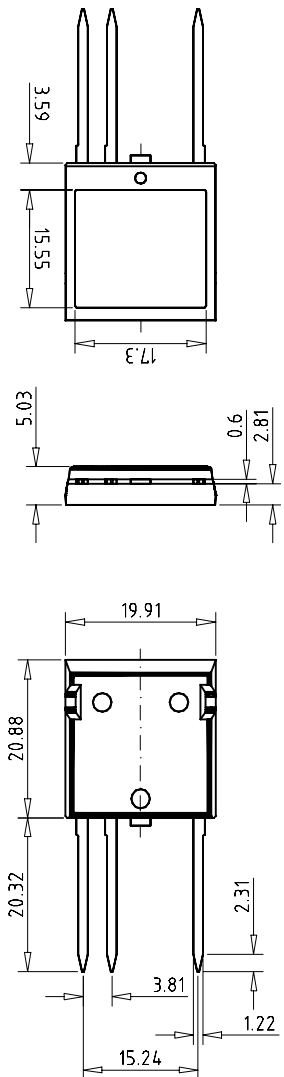
- switched mode power supplies
- DC-DC converters
- resonant converters
- lamp ballasts
- laser generators, x ray generators

**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		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")**



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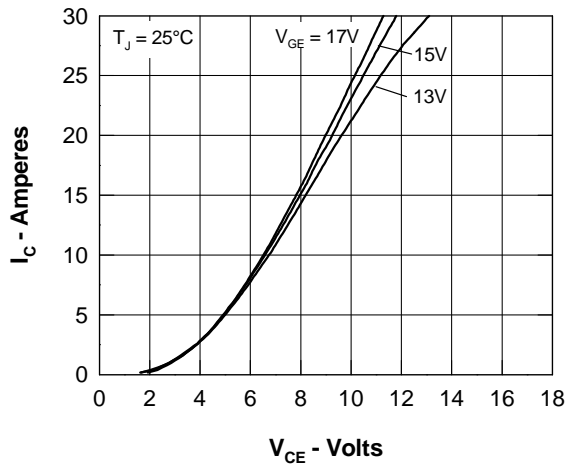


Fig. 1 Typ. Output Characteristics

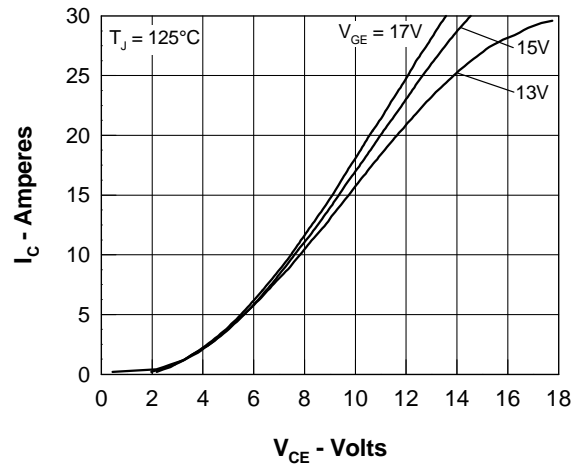


Fig. 2 Typ. Output Characteristics

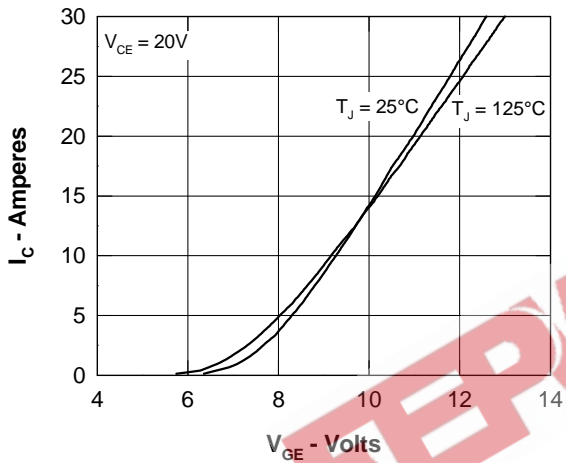


Fig. 3 Typ. Transfer Characteristics

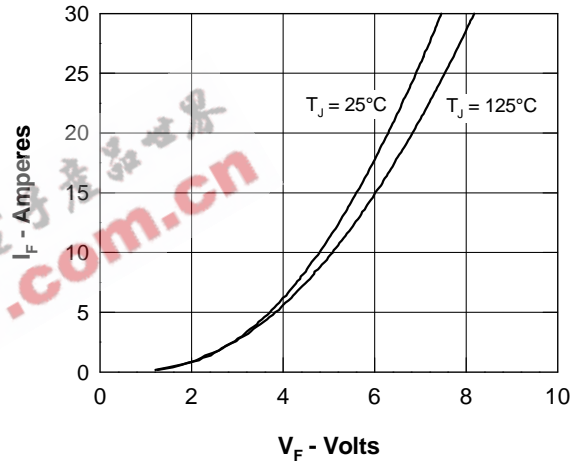


Fig. 4 Typ. Characteristics of Reverse Conduction

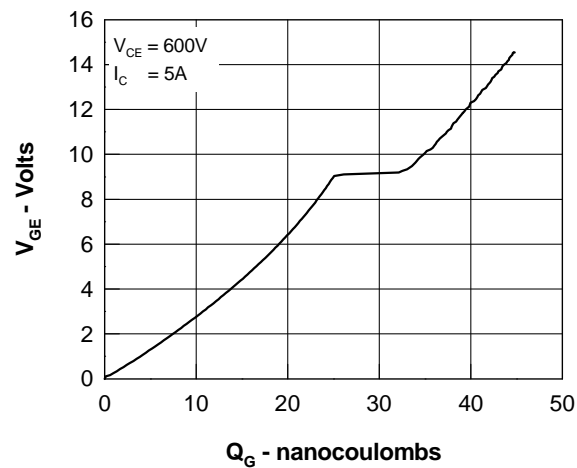


Fig. 5 Typ. Gate Charge characteristics

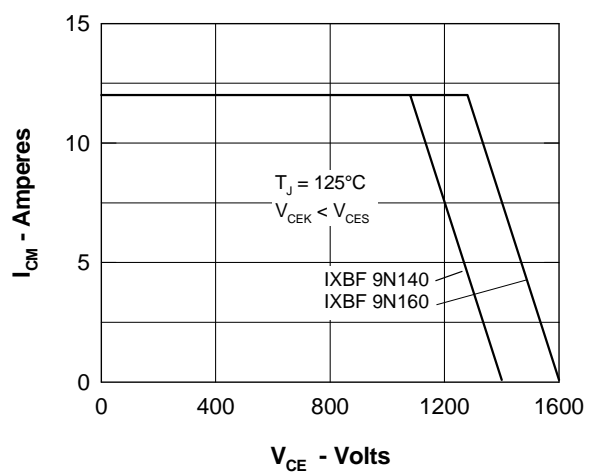


Fig. 6 Reverse Biased Safe Operating Area RBSOA

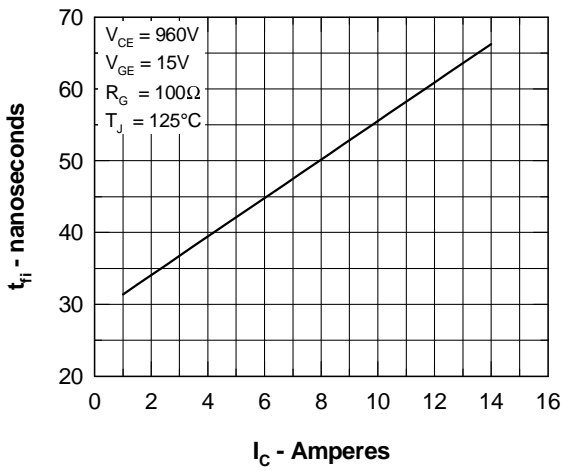


Fig. 7 Typ. Fall Time

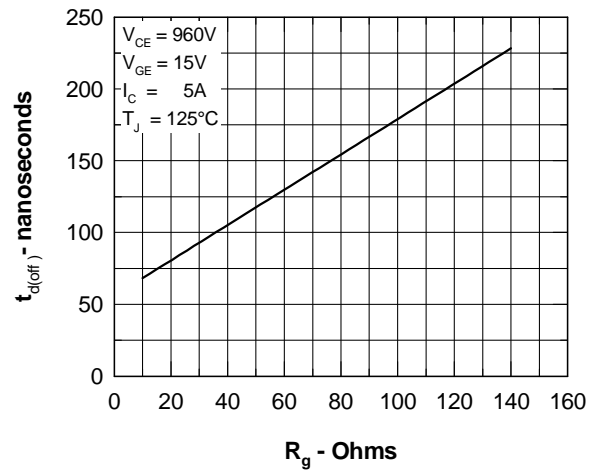


Fig. 8 Typ. Turn Off Delay Time

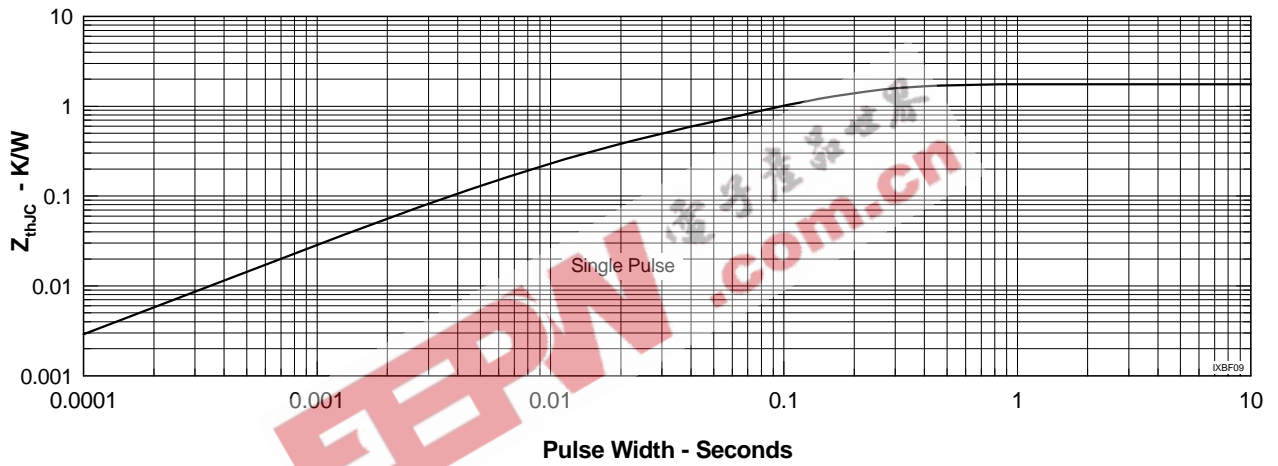


Fig. 9 Typ. Transient Thermal Impedance