

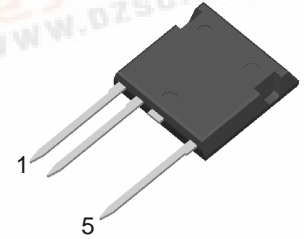
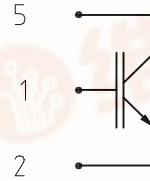


**High Voltage  
BIMOSFET™**  
in High Voltage  
ISOPLUS i4-PAC™

**IXBF 40N140**  
**IXBF 40N160**

**$I_{C25}$  = 28 A**  
 **$V_{CES}$  = 1400/1600 V**  
 **$V_{CE(sat)}$  = 6.2 V**  
 **$t_f$  = 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 40N140	1400	V
		IXBF 40N160	1600	V
$V_{GES}$			$\pm 20$	V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$		28	A
	$T_C = 90^{\circ}\text{C}$		16	A
$I_{CM}$ $V_{CEK}$	} $V_{GE} = 15/0\text{ V}; R_G = 22\ \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100\ \mu\text{H}$		40	A
			$0.8V_{CES}$	
$P_{tot}$	$T_C = 25^{\circ}\text{C}$		250	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)

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 20\text{ A}; V_{GE} = 15\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		6.2	7.1 V
				6.9 V
$V_{GE(th)}$	$I_C = 2\text{ mA}; V_{GE} = V_{CE}$	4		8 V
$I_{CES}$	$V_{CE} = 0.8V_{CES}; V_{GE} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.8	0.4 mA mA
$I_{GES}$	$V_{CE} = 0\text{ V}; V_{GE} = \pm 20\text{ V}$			500 nA
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	} Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 960\text{ V}; I_C = 25\text{ A}$ $V_{GE} = 15/0\text{ V}; R_G = 22\ \Omega$		200	ns
			60	ns
			300	ns
			40	ns
$C_{ies}$	$V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}; f = 1\text{ MHz}$		3300	pF
$Q_{Gon}$	$V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 20\text{ A}$		130	nC
$V_F$	(reverse conduction); $I_F = 20\text{ A}$		2.5	V
$R_{thJC}$				0.5 K/W

**Applications**

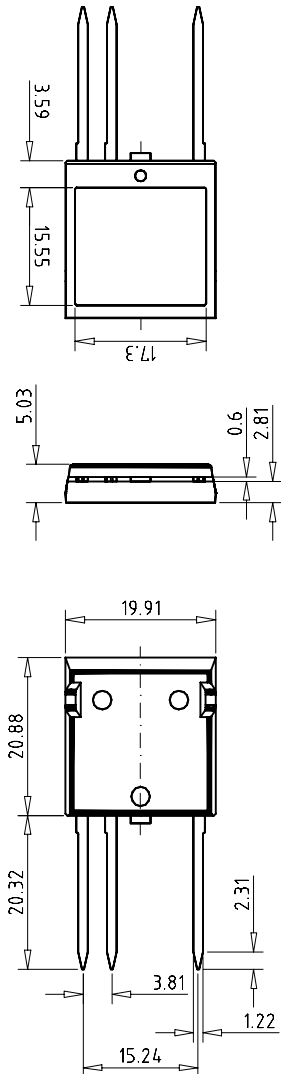
- switched mode power supplies
- DC-DC converters
- resonant converters
- lamp ballasts
- laser generators, x ray generators



**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")**


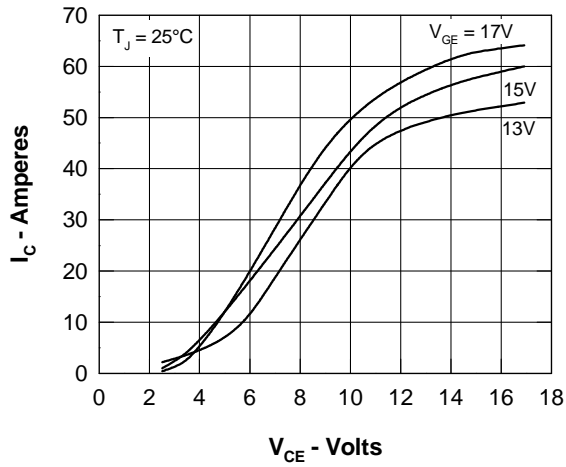


Fig. 1 Typ. Output Characteristics

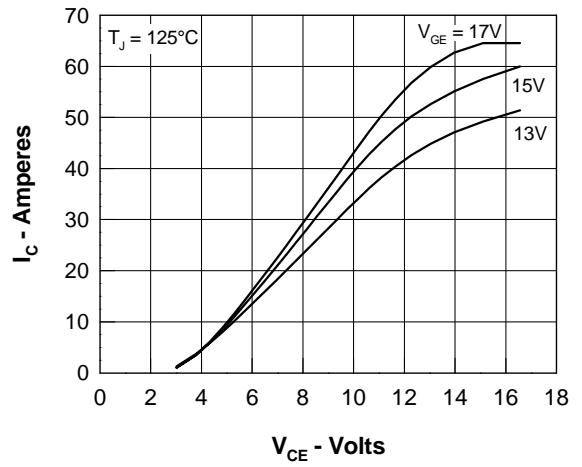


Fig. 2 Typ. Output Characteristics

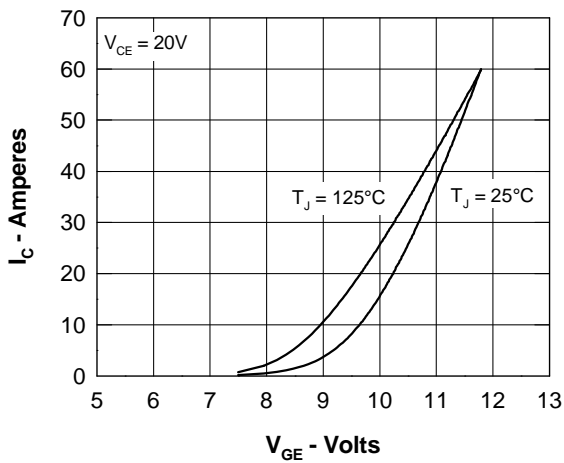


Fig. 3 Typ. Transfer Characteristics

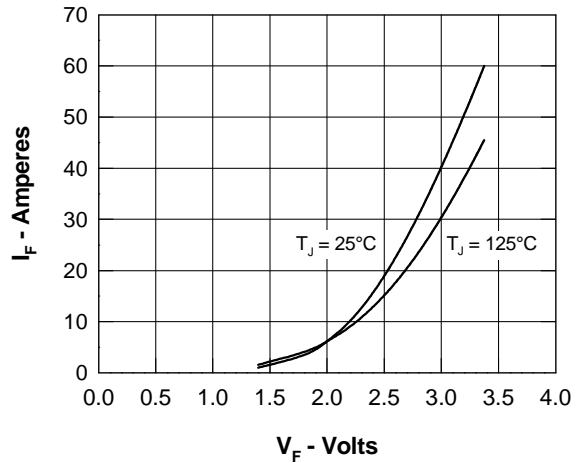


Fig. 4 Typ. Characteristics of Reverse Conduction

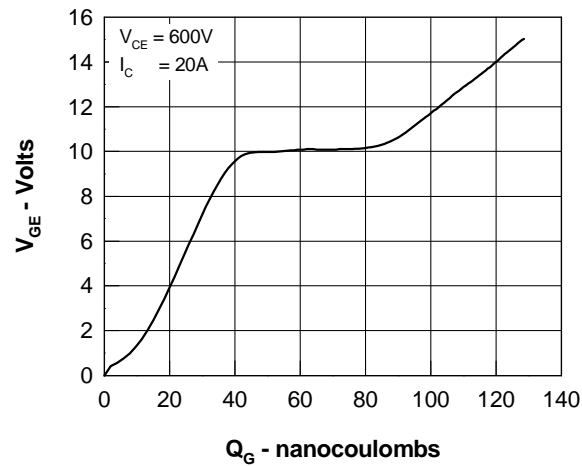


Fig. 5 Typ. Gate Charge characteristics

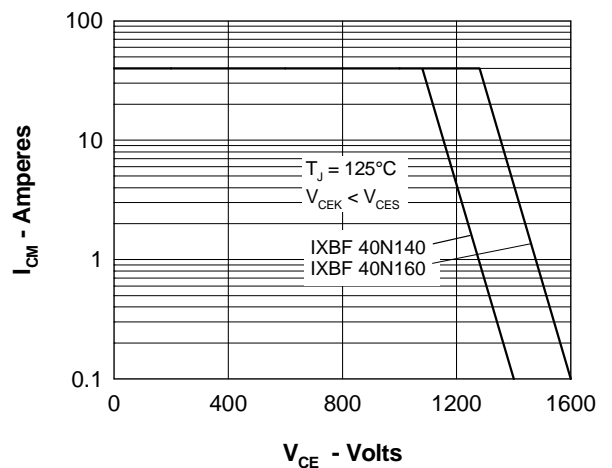


Fig. 6 Reverse Based Safe Operating Area RBSOA

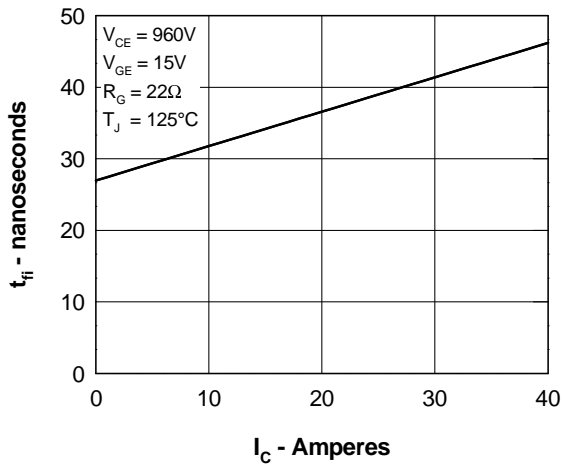


Fig. 7 Typ. Fall Time

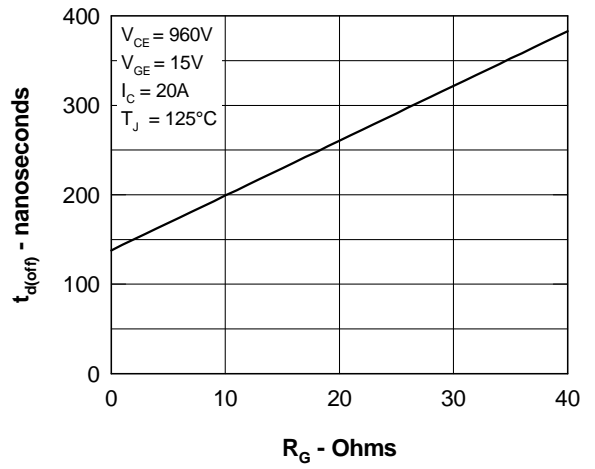


Fig. 8 Typ. Turn Off Delay Time

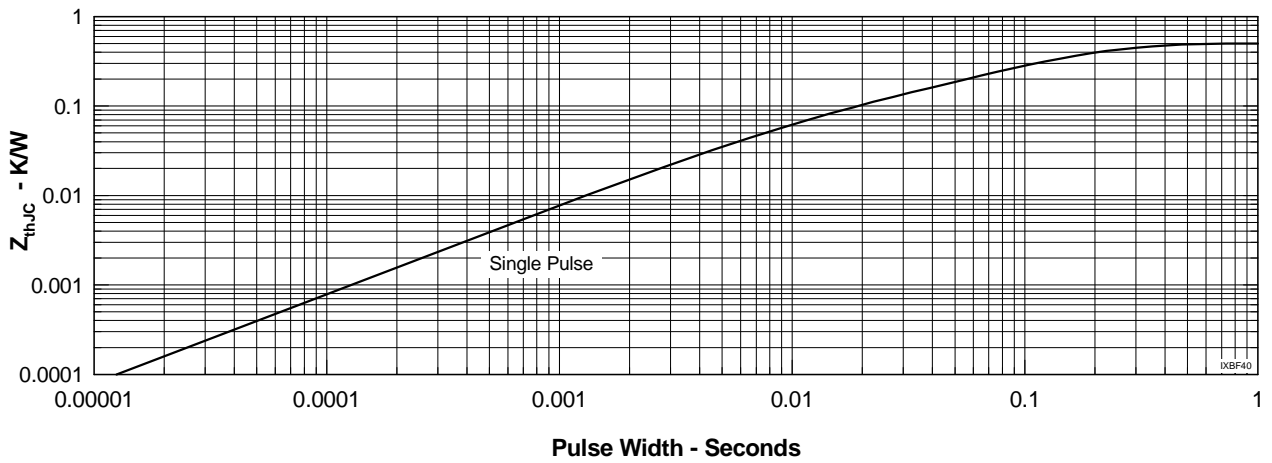


Fig. 9 Typ. Transient Thermal Impedance