

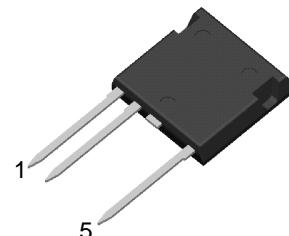
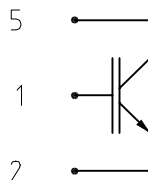
High Voltage BIMOSFET™

in High Voltage
ISOPLUS i4-PAC™

IXBF 40N140 IXBF 40N160

$I_{C25} = 28 \text{ A}$
 $V_{CES} = 1400/1600 \text{ V}$
 $V_{CE(sat)} = 6.2 \text{ V}$
 $t_f = 40 \text{ ns}$

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}			± 20	V
I_{C25}	$T_C = 25^\circ\text{C}$		28	A
I_{C90}	$T_C = 90^\circ\text{C}$		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 6.9	7.1 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 60 300 40	ns ns ns 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	

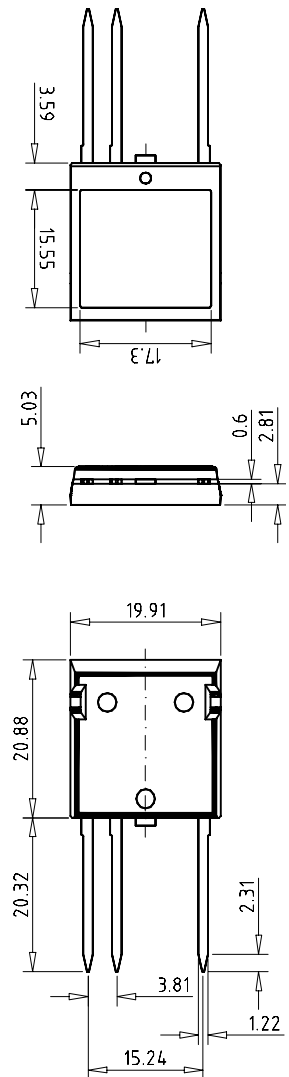
Applications

- 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
Weight			9	g

Dimensions in mm (1 mm = 0.0394")


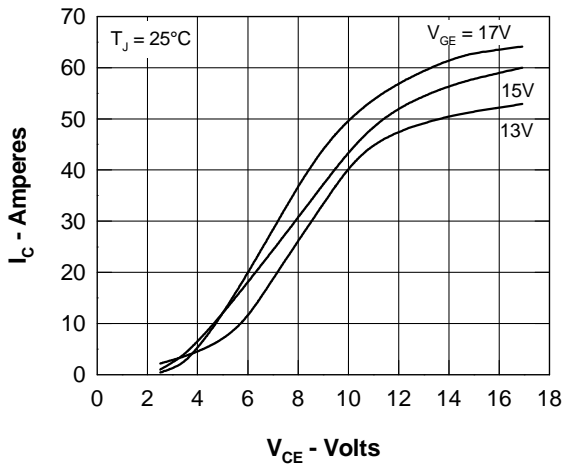


Fig. 1 Typ. Output Characteristics

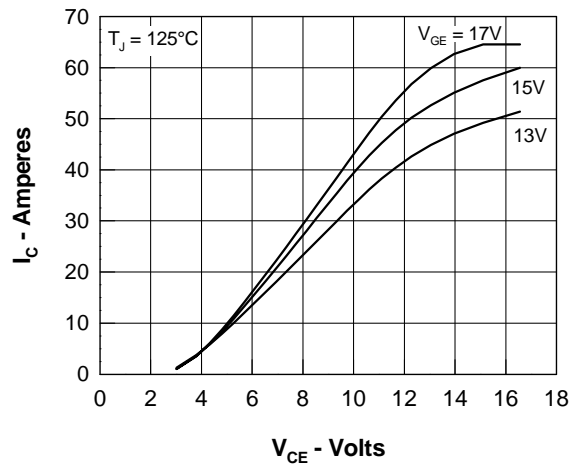


Fig. 2 Typ. Output Characteristics

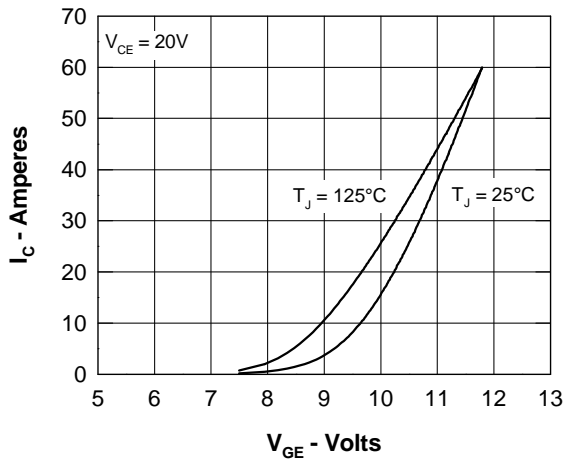


Fig. 3 Typ. Transfer Characteristics

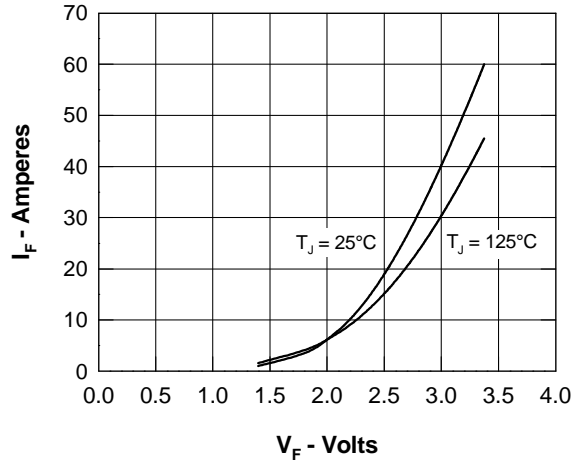


Fig. 4 Typ. Characteristics of Reverse Conduction

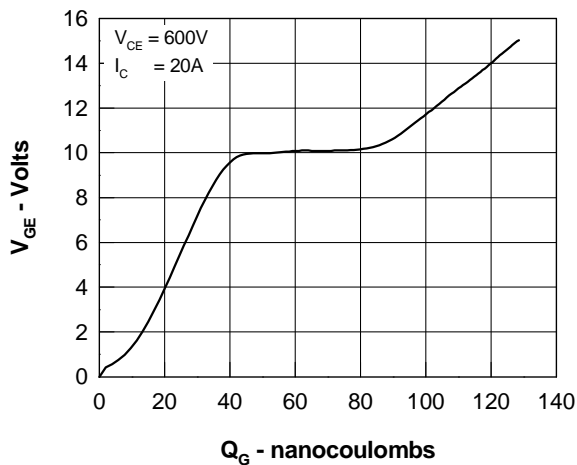


Fig. 5 Typ. Gate Charge characteristics

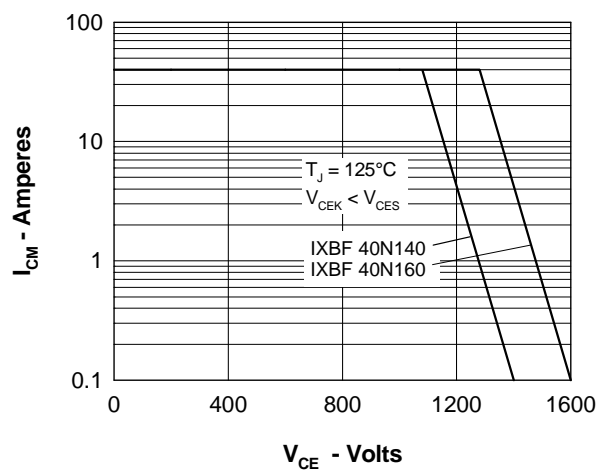


Fig. 6 Reverse Based Safe Operating Area RBSOA

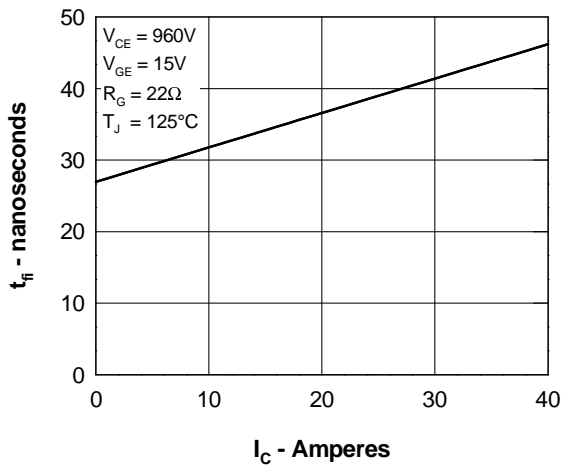


Fig. 7 Typ. Fall Time

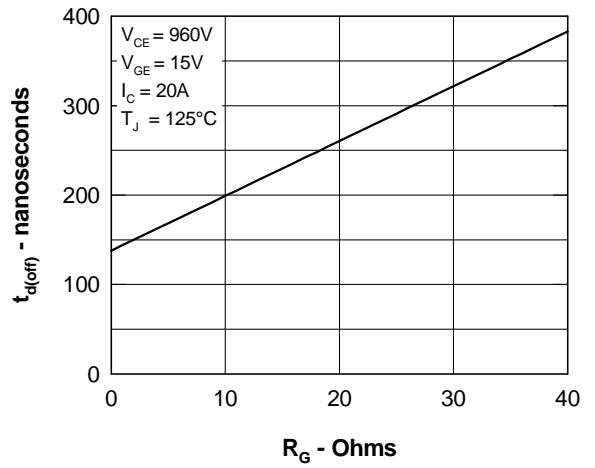


Fig. 8 Typ. Turn Off Delay Time

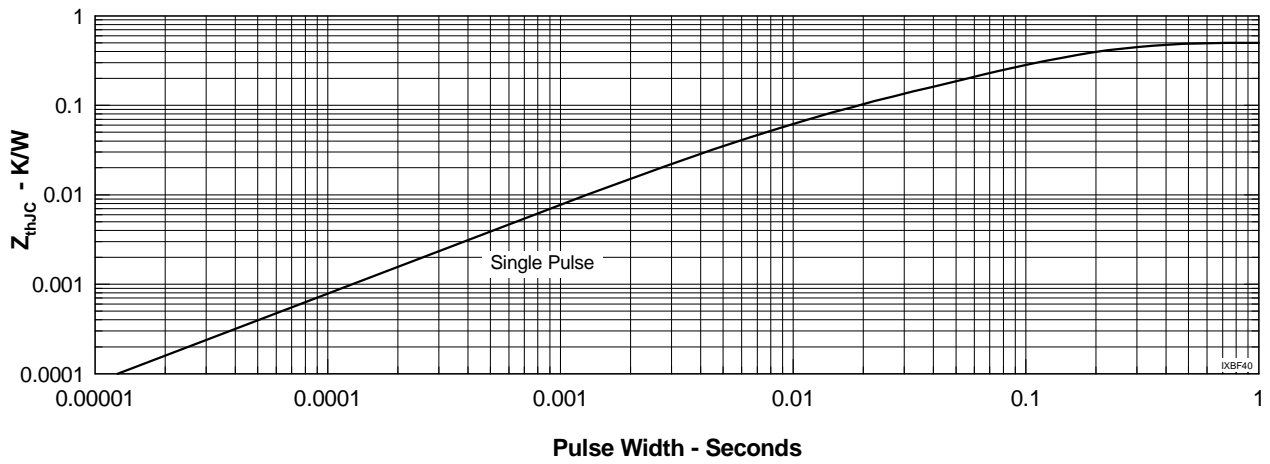


Fig. 9 Typ. Transient Thermal Impedance