

High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

IXBT22N300HV IXBH22N300HV



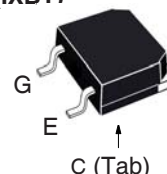
$$V_{CES} = 3000V$$

$$I_{C110} = 22A$$

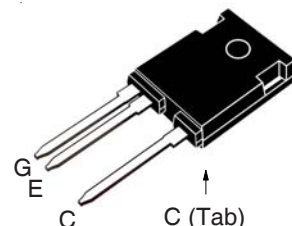
$$V_{CE(sat)} \leq 2.7V$$

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ C$ to $150^\circ C$	3000	V
V_{CGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GE} = 1M\Omega$	3000	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ C$	60	A
I_{C110}	$T_C = 110^\circ C$	22	A
I_{CM}	$T_C = 25^\circ C$, 1ms	190	A
SSOA (RBSOA)	$V_{GE} = 15V$, $T_{VJ} = 125^\circ C$, $R_G = 15\Omega$ Clamped Inductive Load	$I_{CM} = 180$ $V_{CES} \leq 1500$	A V
T_{SC} (SCSOA)	$V_{GE} = 15V$, $T_J = 125^\circ C$, $R_G = 52\Omega$, $V_{CE} = 1500V$, Non-Repetitive	10	μs
P_C	$T_C = 25^\circ C$	290	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	Maximum Lead Temperature for Soldering	300	$^\circ C$
T_{SOLD}	Plastic Body for 10s	260	$^\circ C$
M_d	Mounting Torque (TO-247HV)	1.13/10	Nm/lb.in
Weight	TO-268HV	4	g
	TO-247HV	6	g

TO-268HV (IXBT)



TO-247HV (IXBH)



G = Gate C = Collector
E = Emitter Tab = Collector

Features

- High Voltage Packages
- High Blocking Voltage
- High Peak Current Capability
- Low Saturation Voltage

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generators
- Capacitor Discharge Circuits
- AC Switches

Symbol	Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu A$, $V_{GE} = 0V$	3000		V
$V_{GE(th)}$	$I_C = 250\mu A$, $V_{CE} = V_{GE}$	3.0		5.0 V
I_{CES}	$V_{CE} = V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ C$			25 μA 1.5 mA
I_{GES}	$V_{CE} = 0V$, $V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = 22A$, $V_{GE} = 15V$, Note 1 $T_J = 125^\circ C$		2.2	2.7 V
			2.7	V

Symbol Test Conditions		Characteristic Values		
(T _J = 25°C Unless Otherwise Specified)		Min.	Typ.	Max.
g_{FS}	I _C = 22A, V _{CE} = 10V, Note 1	13	22	S
C_{ies}	V _{CE} = 25V, V _{GE} = 0V, f = 1MHz		2200	pF
C_{oes}			85	pF
C_{res}			30	pF
Q_{g(on)}	I _C = 22A, V _{GE} = 15V, V _{CE} = 1500V		110	nC
Q_{ge}			13	nC
Q_{gc}			45	nC
t_{d(on)}	Resistive Switching Times, T_J = 25°C	I _C = 22A, V _{GE} = 15V	46	ns
t_r			360	ns
t_{d(off)}			205	ns
t_f			1820	ns
t_f			V _{CE} = 960V, R _G = 15Ω	
t_{d(on)}	Resistive Switching Times, T_J = 125°C	I _C = 22A, V _{GE} = 15V	43	ns
t_r			700	ns
t_{d(off)}			220	ns
t_f			1650	ns
t_f			V _{CE} = 960V, R _G = 15Ω	
R_{thJC}				0.43 °C/W
R_{thCS}	TO-247HV	0.21		°C/W

Reverse Diode

Symbol Test Conditions		Characteristic Values		
(T _J = 25°C Unless Otherwise Specified)		Min.	Typ.	Max
V_F	I _F = 22A, V _{GE} = 0V, Note 1			2.7 V
t_{rr}	I _F = 11A, V _{GE} = 0V, -di _F /dt = 100A/μs		1.4	μs
I_{RM}			30	A
Q_{RM}			21	μC

Note: 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

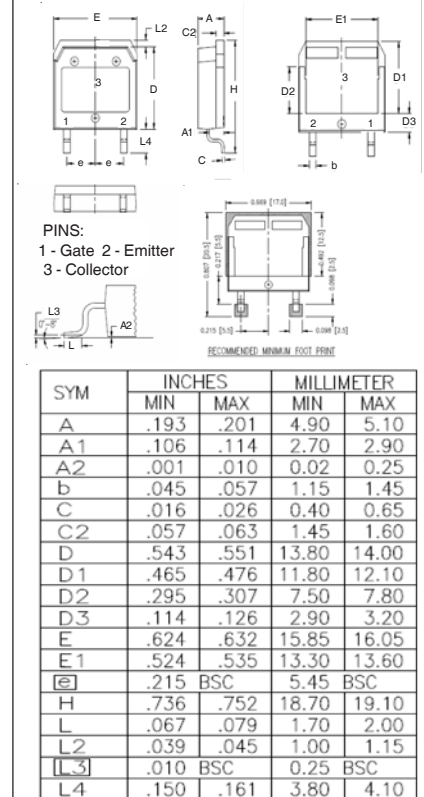
ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

IXYS Reserves the Right to Change Limits, Test Conditions and Dimensions.

IXYS MOSFETs and IGBTs are covered 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2
by one or more of the following U.S. patents: 4,860,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2
4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

TO-268HV Outline



TO-247HV Outline

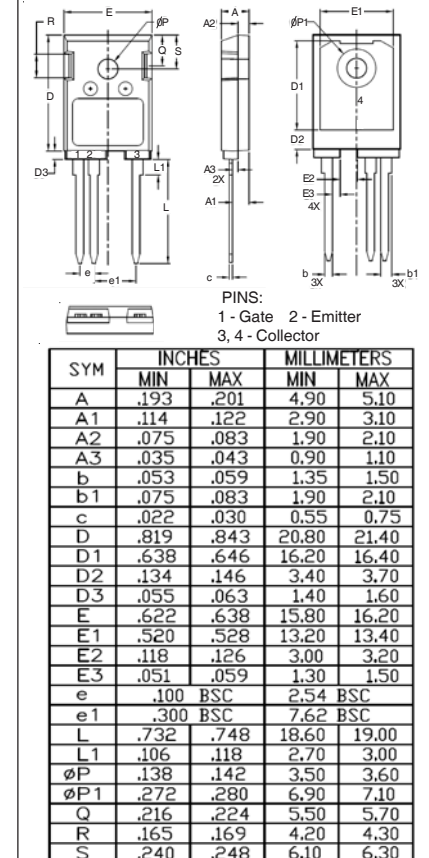


Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

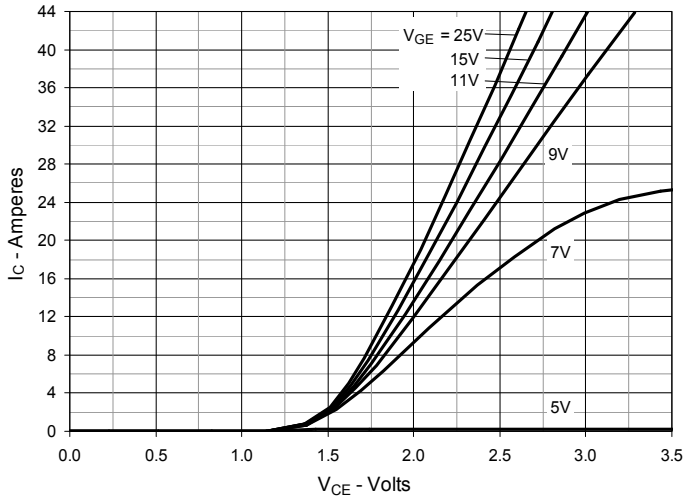


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

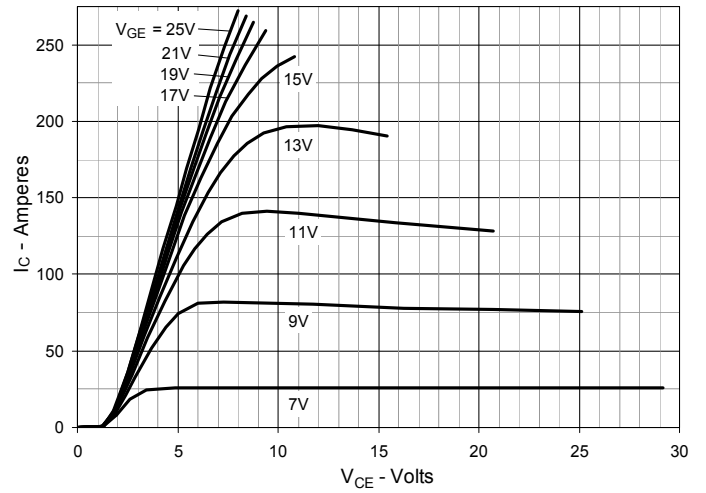


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

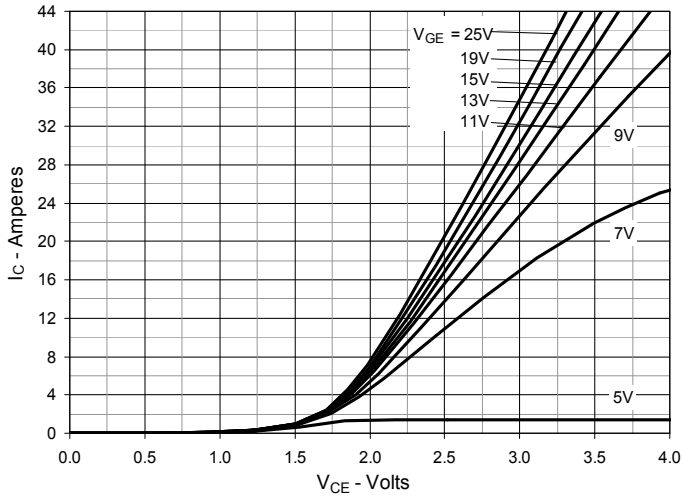


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

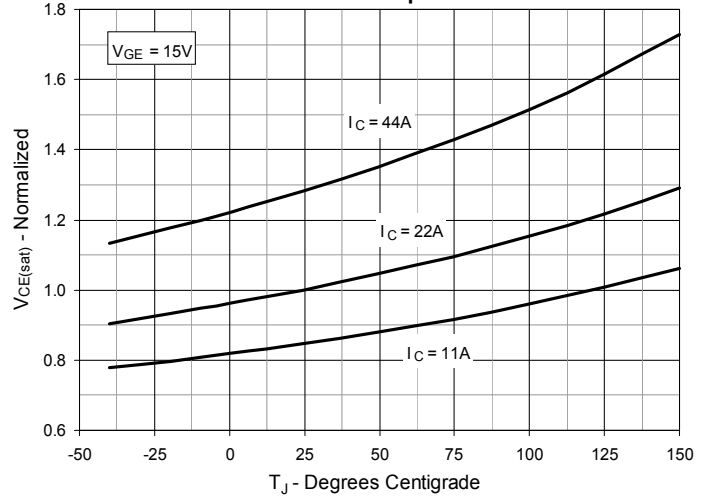


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

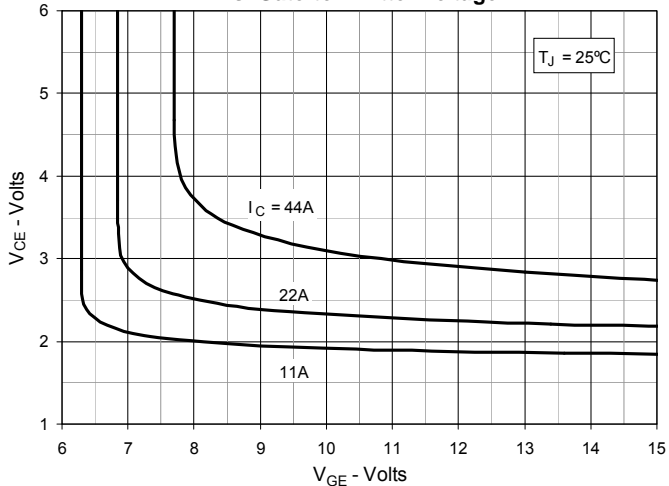


Fig. 6. Input Admittance

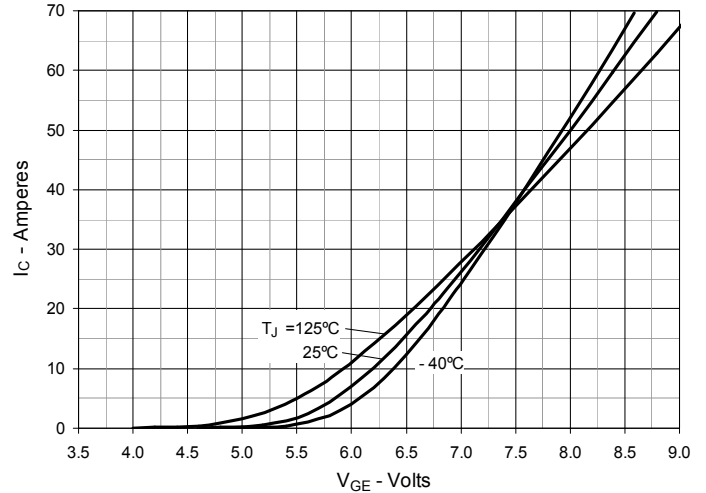


Fig. 7. Transconductance

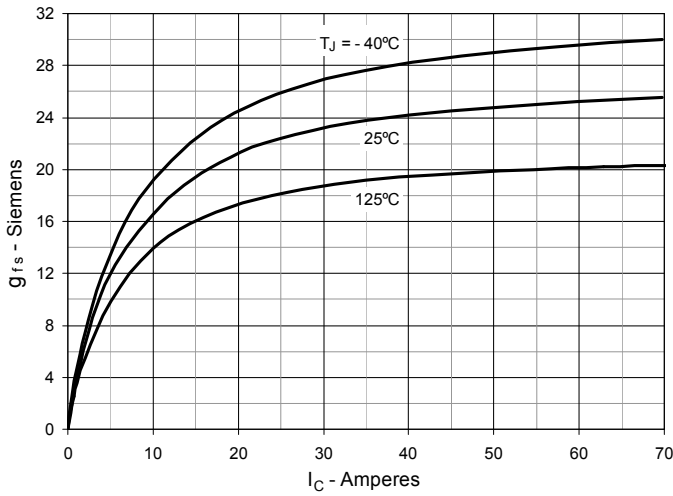


Fig. 8. Gate Charge

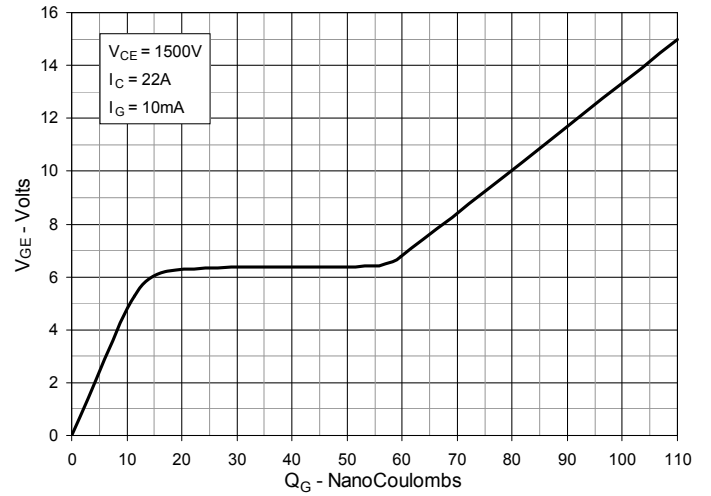


Fig. 9. Forward Voltage Drop of Intrinsic Diode

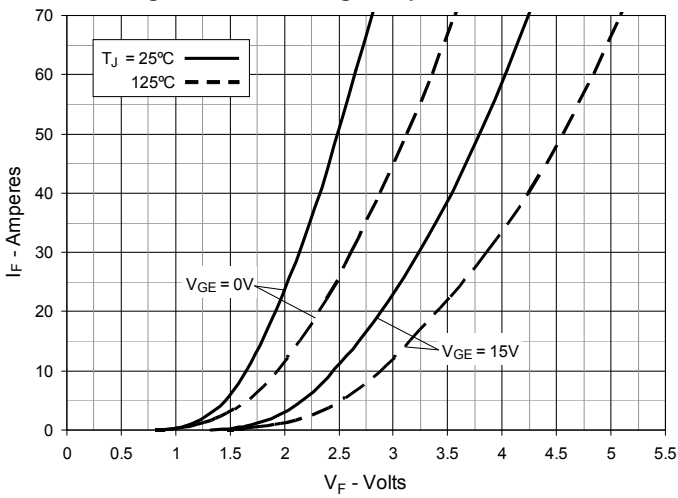


Fig. 10. Capacitance

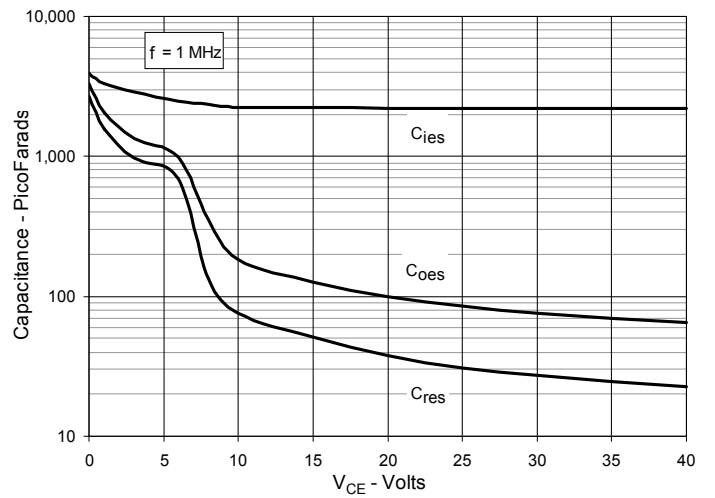


Fig. 11. Reverse-Bias Safe Operating Area

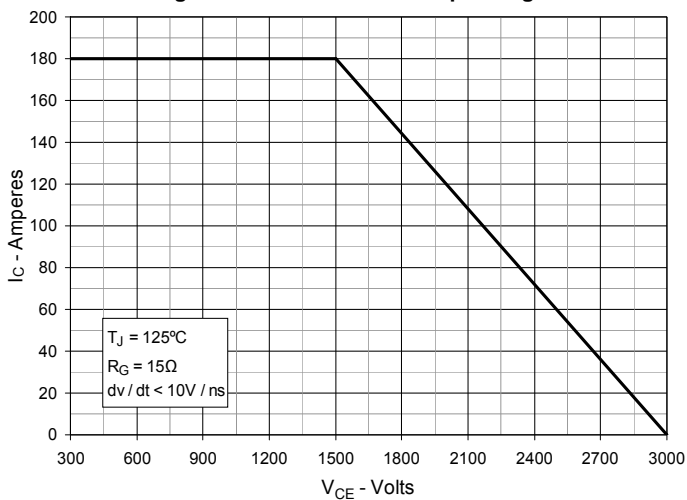


Fig. 12. Maximum Transient Thermal Impedance

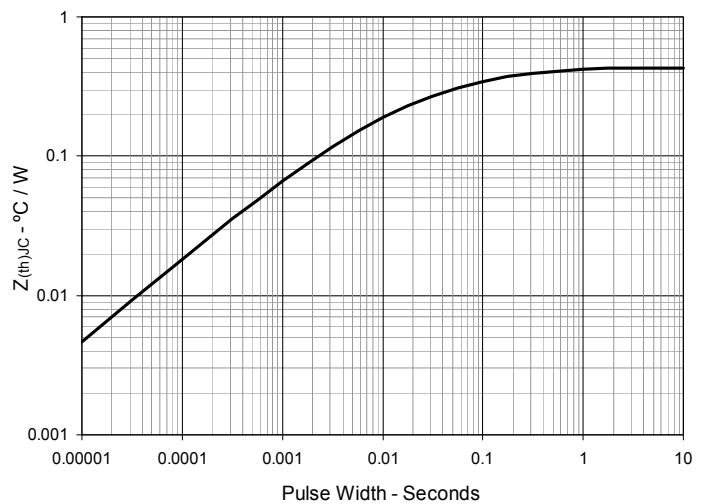


Fig. 13. Forward-Bias Safe Operating Area @ $T_C = 25^\circ\text{C}$

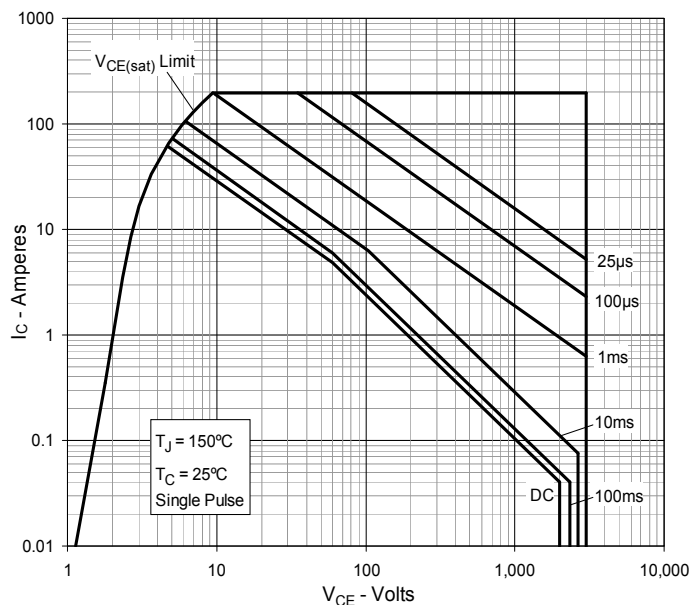
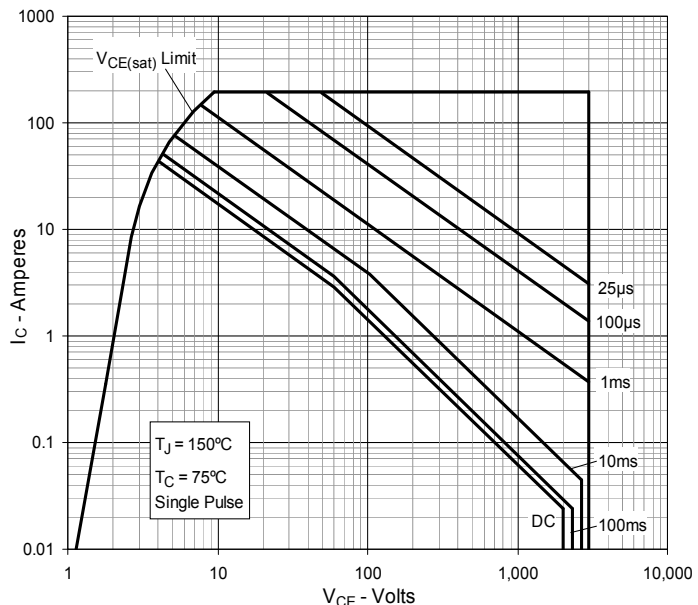


Fig. 14. Forward-Bias Safe Operating Area @ $T_C = 75^\circ\text{C}$





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