Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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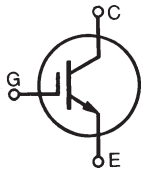
IXYS

IGBT

Lightspeed Series

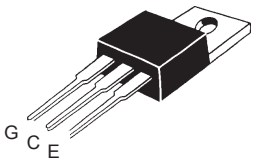
IXGA 15N120C
IXGP 15N120C

V_{CES} = 1200 V
I_{C25} = 30 A
$V_{CE(sat)}$ = 3.8 V
$t_{fi(typ)}$ = 115 ns

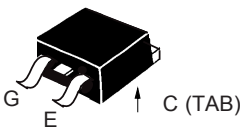


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	30	A
I_{C90}	T_C = 90°C	15	A
I_{CM}	T_C = 25°C, 1 ms	60	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 10 Ω Clamped inductive load	I_{CM} = 40 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	200	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
M_d	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4 0.55/5	Nm/lb.in. Nm/lb.in.
Weight	TO-220 TO-263	4 2	g g

TO-220AB (IXGP)



TO-263 AA (IXGA)



Symbol (T_J = 25°C, unless otherwise specified)	Test Conditions		Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250 μA, V_{GE} = 0 V		1200			V
$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}		2.5		5.0	V
I_{CES}	V_{CE} = V_{CES}	T_J = 25°C			100	μA
	V_{GE} = 0 V	T_J = 125°C			3.5	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{CE90}, V_{GE} = 15				3.8	V
		T_J = 125°C		3.0		V

Features

- International standard packages JEDEC TO-220AB and TO-263AA
- Low switching losses
- MOS Gate turn-on
  - drive simplicity

Applications

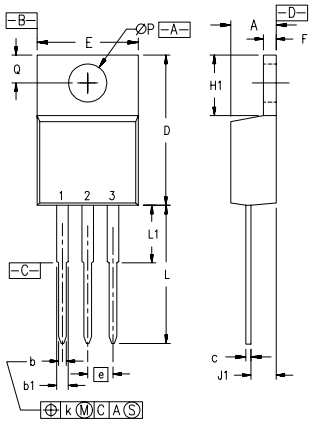
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	12	15		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1700		pF
C_{oes}			95		pF
C_{res}			38		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		86		nC
Q_{ge}			13		nC
Q_{gc}			26		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		25		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V		15		ns
$t_{d(off)}$	V_{CE} = 960 V, $R_G = R_{off}$ = 10 Ω		150	200	ns
t_{fi}	Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G		115	190	ns
E_{off}			1.05	1.6	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		25		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V		18		ns
E_{on}	V_{CE} = 960 V, $R_G = R_{off}$ = 10 Ω		0.60		mJ
$t_{d(off)}$	Remarks: Switching times may		220		ns
t_{fi}	increase for V_{CE} (Clamp) > 0.8 V_{CES},		250		ns
E_{off}	higher T_J or increased R_G		2.1		mJ
R_{thJC}				0.65	K/W
R_{thCK}	TO-220		0.5		K/W

TO-220 AB Dimensions

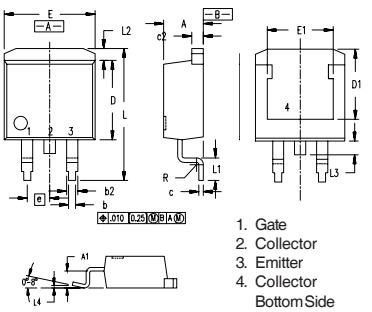


Pins: 1 - Gate 2 - Collector
3 - Emitter 4 - Collector
Bottom Side

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

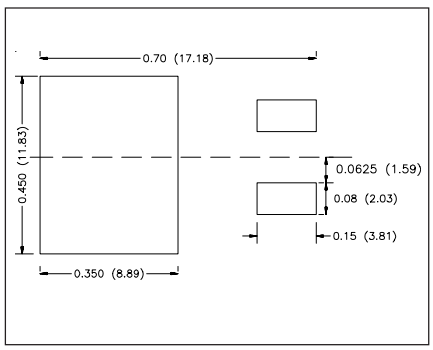
NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-220 AB.

TO-263 AA Outline



1. Gate
2. Collector
3. Emitter
4. Collector
Bottom Side

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029



Min. Recommended Footprint
(Dimensions in inches and mm)

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,850,072 4,835,592 4,931,844 4,881,106 5,034,796 5,017,508 5,063,307 5,049,961 5,237,481 5,187,117 5,381,025 5,486,715 6,404,065B1 6,306,728B1 6,162,665 6,259,123B1 6,534,343 6,306,728B1 6,583,505 6,683,344

Fig. 1. Output Characteristics @ 25ºC

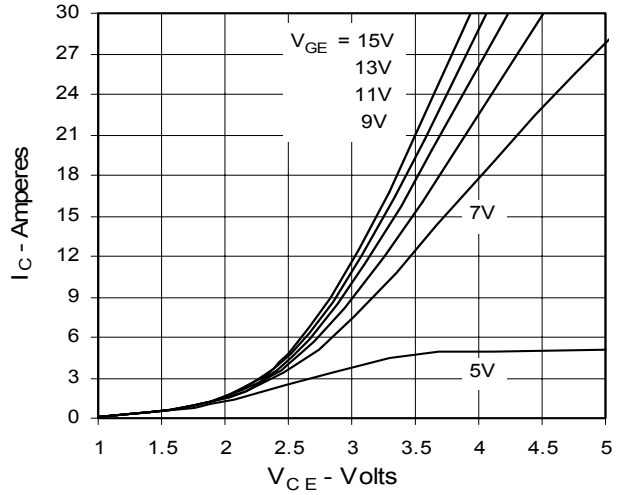


Fig. 2. Extended Output Characteristics @ 25ºC

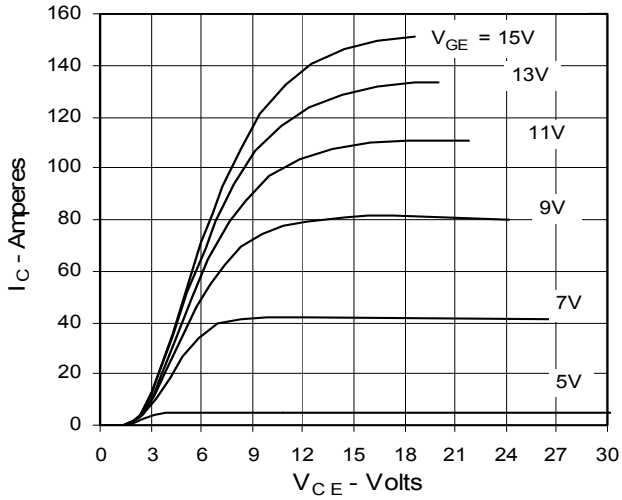


Fig. 3. Output Characteristics @ 125ºC

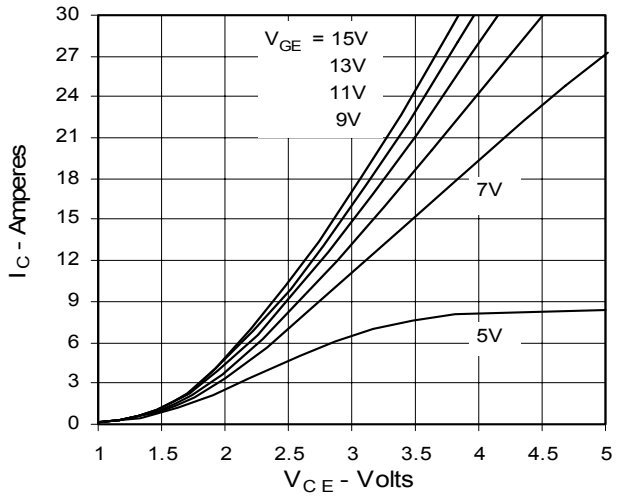


Fig. 4. Dependence of $V_{CE(sat)}$ on Temperature

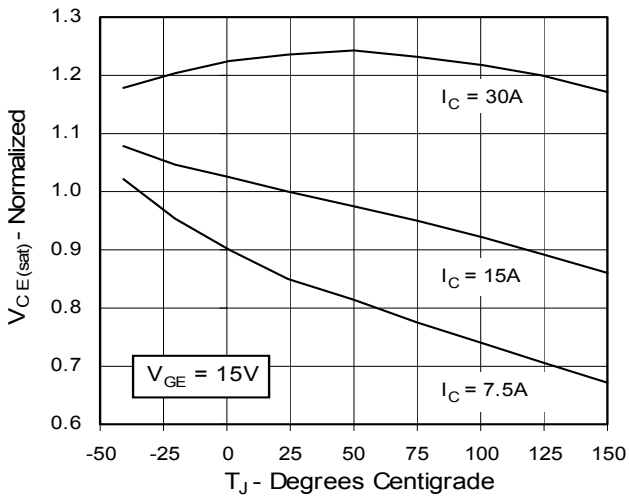


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter voltage

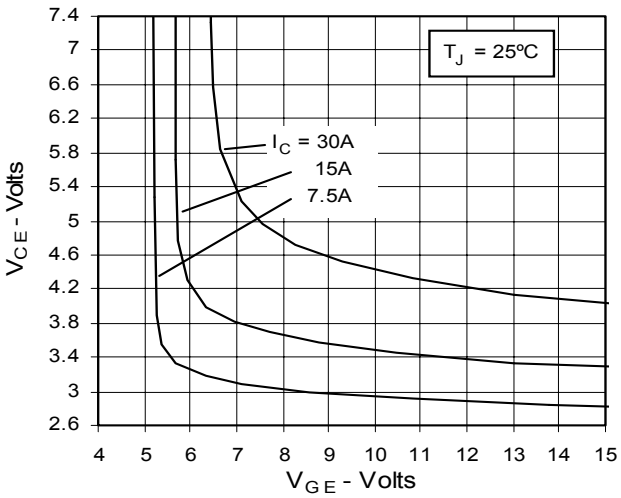


Fig. 6. Input Admittance

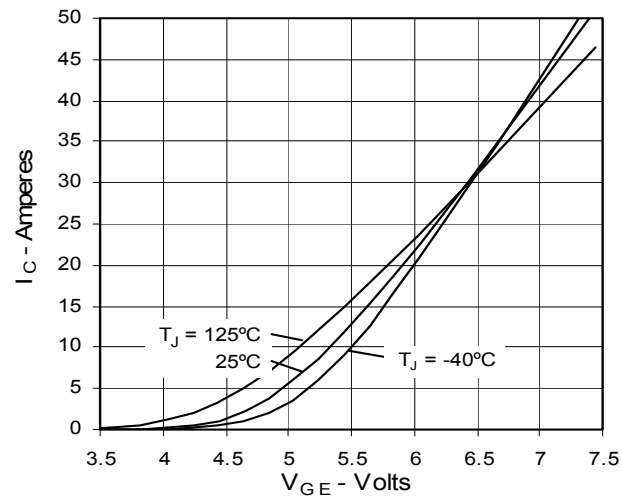


Fig. 7. Transconductance

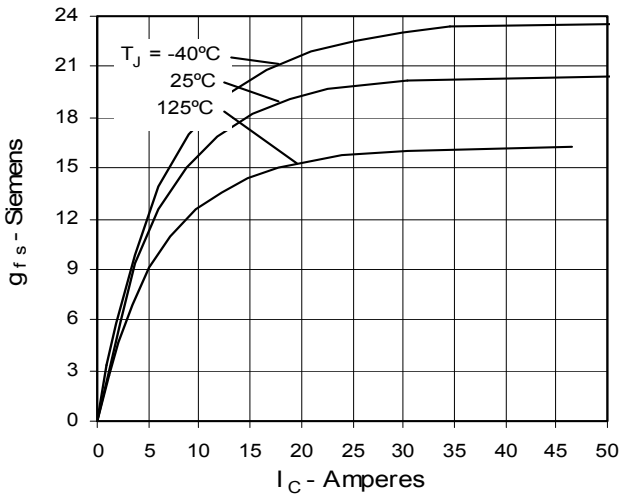


Fig. 8. Dependence of Turn-Off Energy on R_G

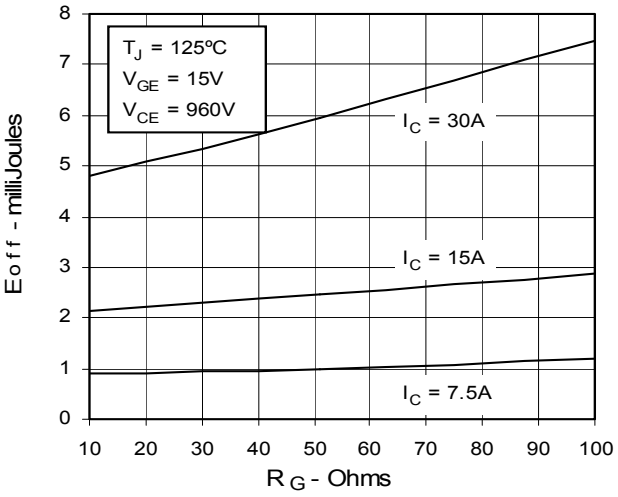


Fig. 9. Dependence of Turn-Off Energy on I_C

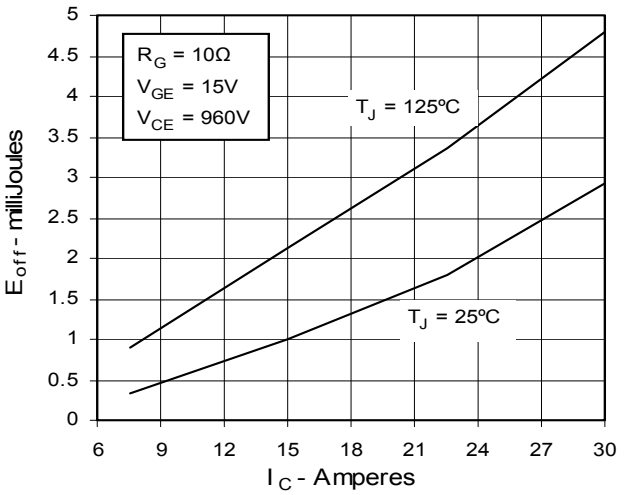


Fig. 10. Dependence of Turn-Off Energy on Temperature

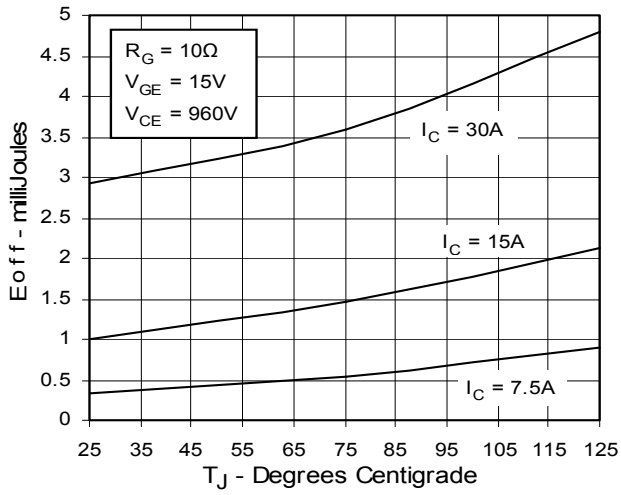


Fig. 11. Dependence of Turn-Off Switching Time on R_G

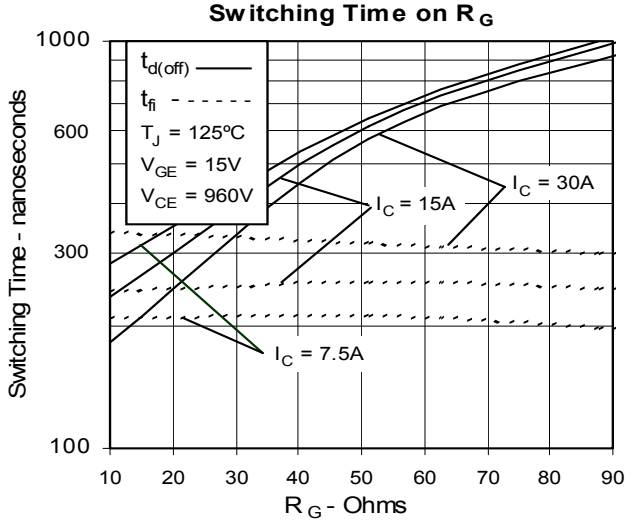


Fig. 12. Dependence of Turn-Off Switching Time on I_C

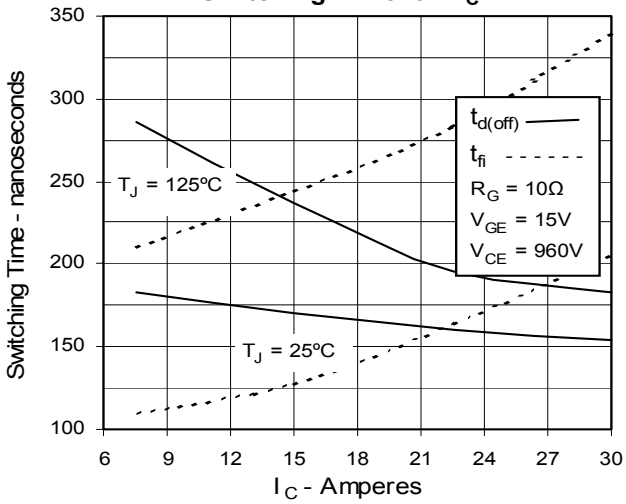


Fig. 13. Dependence of Turn-Off Switching Time on Temperature

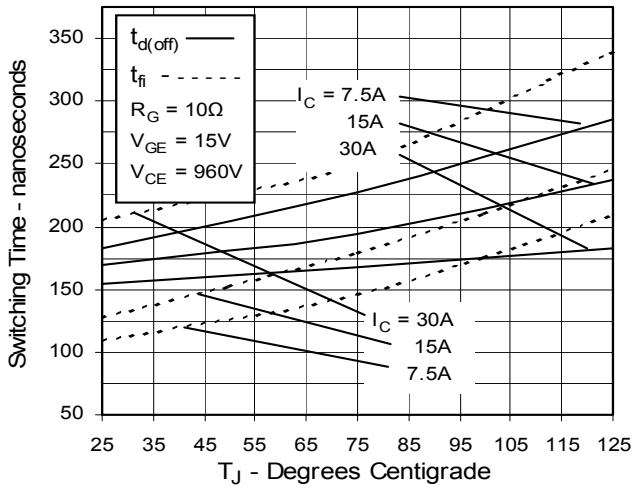


Fig. 14. Reverse-Bias Safe Operating Area

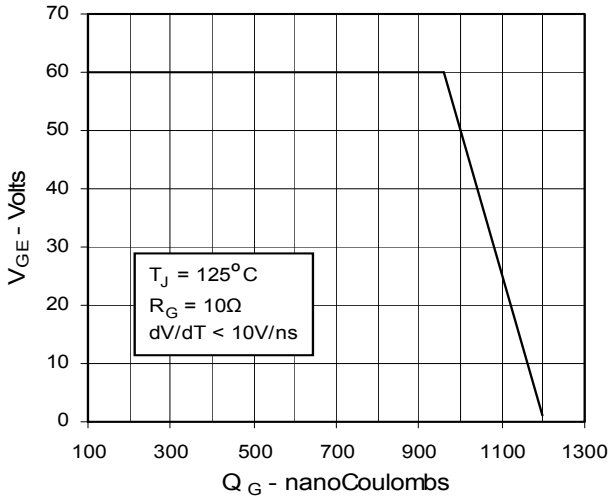


Fig. 15. Gate Charge

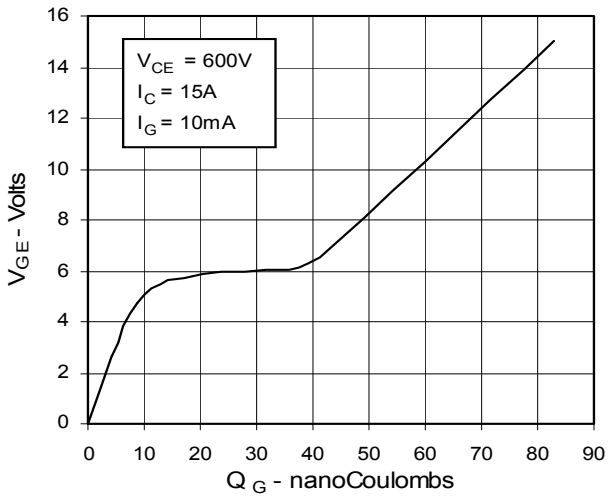


Fig. 16. Capacitance

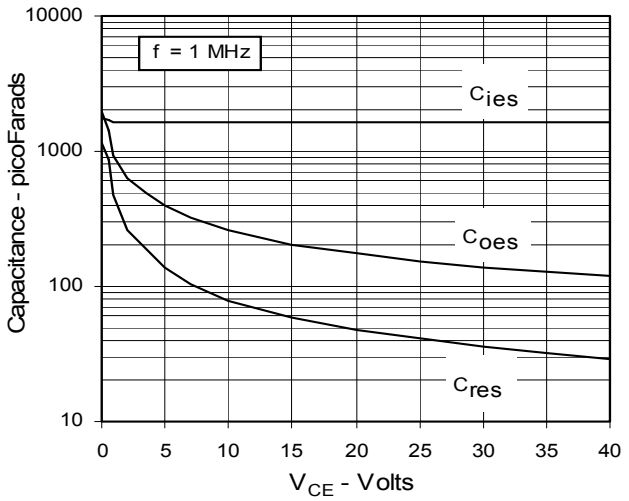


Fig. 17. Maximum Transient Thermal Resistance