

ITC14407516D

POWERLINE N-CHANNEL IGBT CHIP

FEATURES

- n - Channel.
- Enhancement Mode.
- High Input Impedance.
- High Switching Speed.
- Latch-Free Operation.
- Low Forward Voltage Drop.
- Short Circuit Capability (10µs).

TYPICAL KEY PARAMETERS (25°C)

V_{CES}	1600V
$I_{C(CONT)}$	75A
$V_{CE(sat)}$	3.3V

RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
V_{CES}	Collector-emitter voltage	$V_{GE} = 0V$	1600	V
V_{GE}	Gate-emitter voltage	-	±20	V
$I_{C(CONT)}$	Continuous collector current	-	75	A
$I_{C(PK)}$	Peak collector current	$t_p = 1ms$	150	A

STATIC ELECTRICAL CHARACTERISTICS

 Measured under pulse conditions $T_{case} = 25°C$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units	
I_{CES}	Collector cut-off current	$V_{GE} = 0V, V_{CE} = V_{CES}$	-	-	2	mA	
I_{GES}	Gate leakage current	$V_{GE} = \pm 20V$	-	-	±500	nA	
$V_{GE(TH)}$	Gate threshold voltage	$I_C = 5mA, V_{CE} = V_{GE}$	4.0	-	7.5	V	
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C = 75A, V_{GE} = 15V$	$T_j = 25°C$	-	3.3	4.1	V
			$T_j = 125°C$	-	4.1	5.1	V
		$I_C = 150A, V_{GE} = 15V$	$T_j = 25°C$	-	4.5	5.6	V
			$T_j = 125°C$	-	5.8	7.3	V

All ratings given assuming suitable moutdown of chip.

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AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
C_{ies}	Input capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	12000	-	pF
C_{oes}	Output capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	600	-	pF
C_{ros}	Reverse transfer capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	600	-	pF

INDUCTIVE SWITCHING CHARACTERISTICS

$T_{case} = 125^{\circ}C$ unless stated otherwise.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$t_{d(off)}$	Turn-off delay time	Inductive load $I_C = 75A$ $V_{CE} = 50\% V_{CES}$ $V_{GE} = \pm 15V,$ $R_G = 6.6\Omega$	-	550	-	ns
t_f	Fall time		-	590	-	ns
E_{OFF}	Turn-off energy loss		-	20	-	mJ
$t_{d(on)}$	Turn-on delay time		-	790	-	ns
t_r	Rise time		-	270	-	ns
E_{ON}	Turn-on energy loss		-	43	-	mJ

THERMAL CHARACTERISTICS

Symbol	Parameter	Conditions	Max.	Units
T_j	Junction temperature	-	150	$^{\circ}C$
T_{stg}	Storage temperature	-	-55 to +150	$^{\circ}C$

All ratings given assuming suitable mountdown of chip.

CURVES

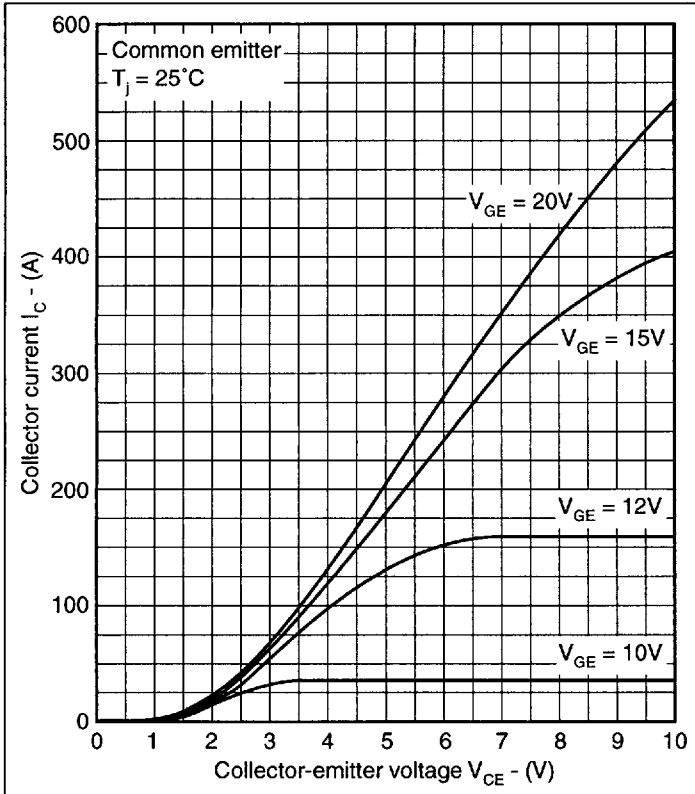


Fig.1 Typical output characteristics @ 25°C

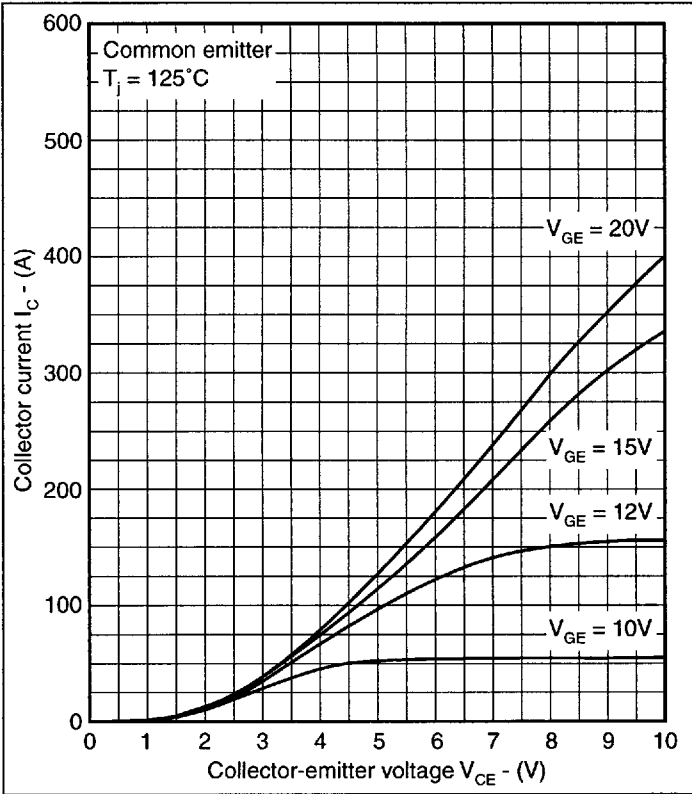


Fig.2 Typical output characteristics @ 125°C

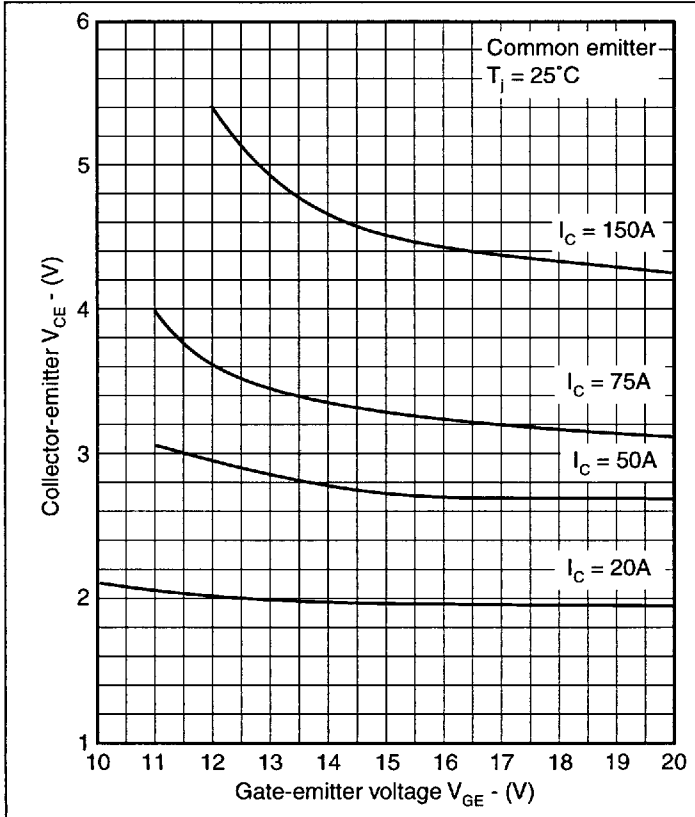


Fig.3 Typical transfer characteristics @ 25°C

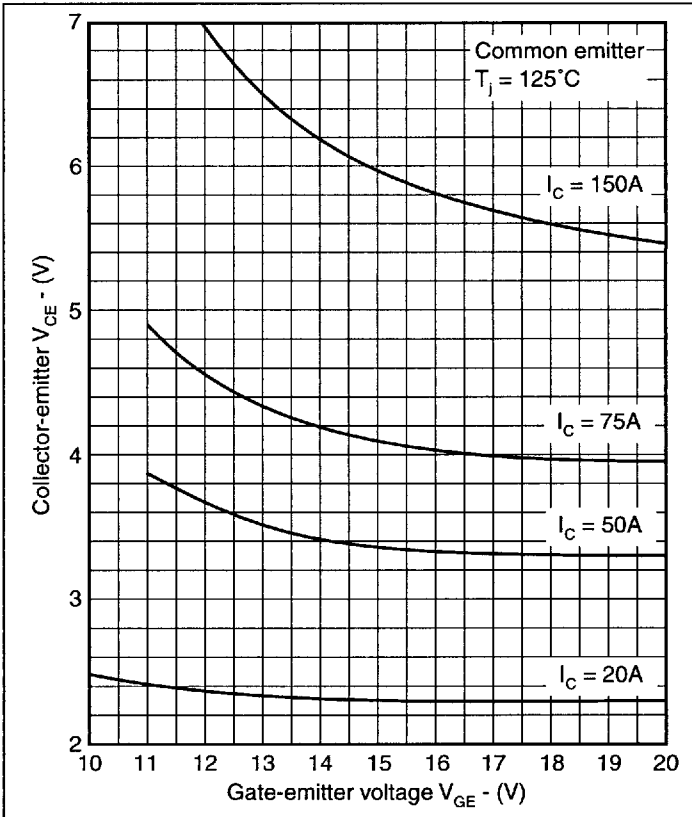


Fig.4 Typical transfer characteristics @ 125°C

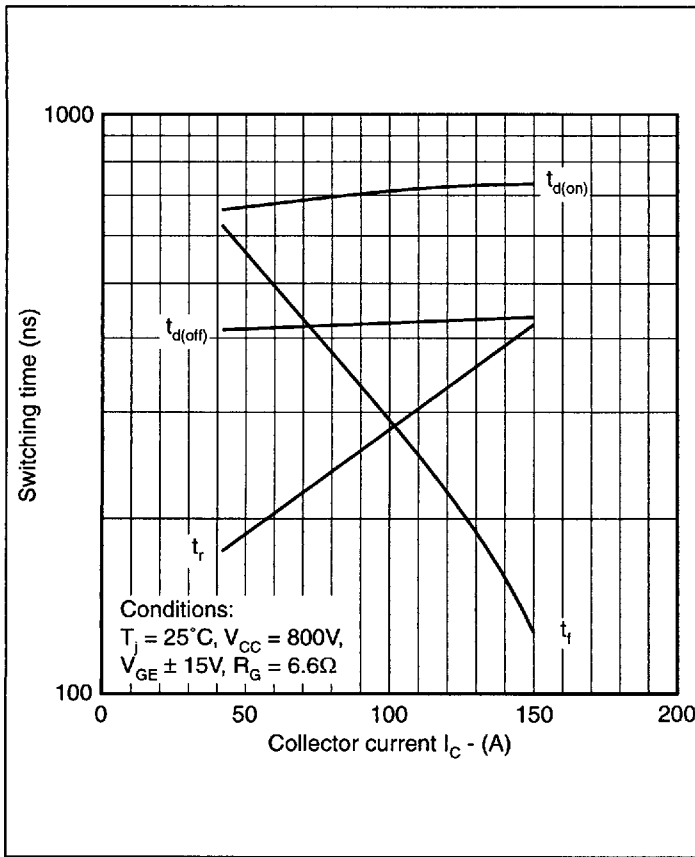


Fig.5 Typical switching time vs I_C @ 25°C

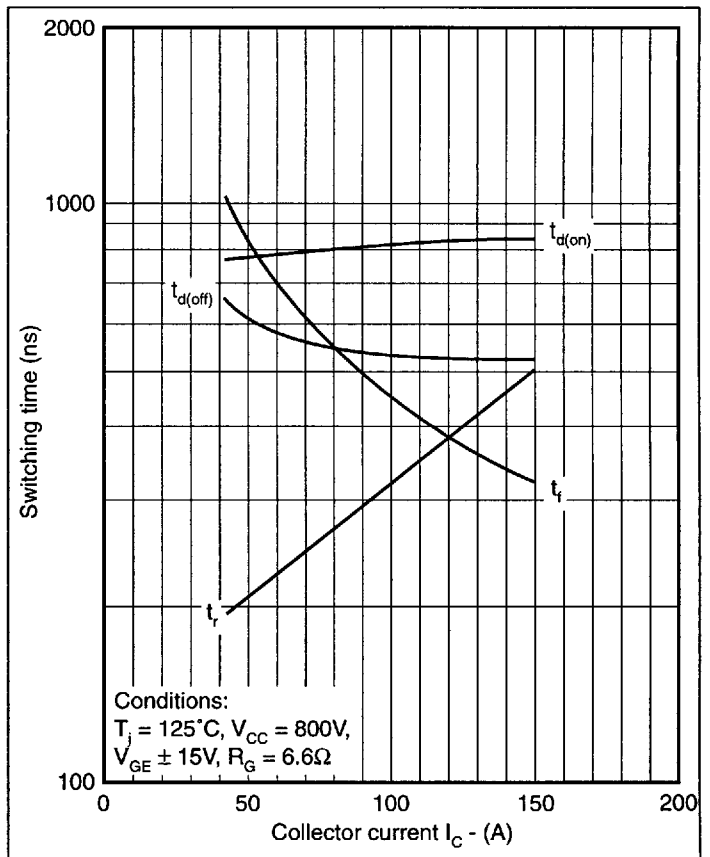


Fig.6 Typical switching time vs I_C @ 125°C

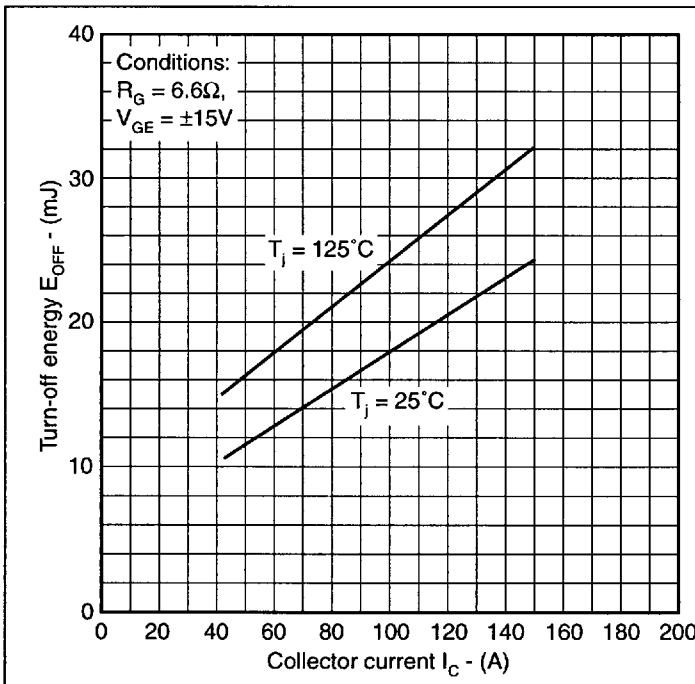


Fig.7 Typical turn-off losses

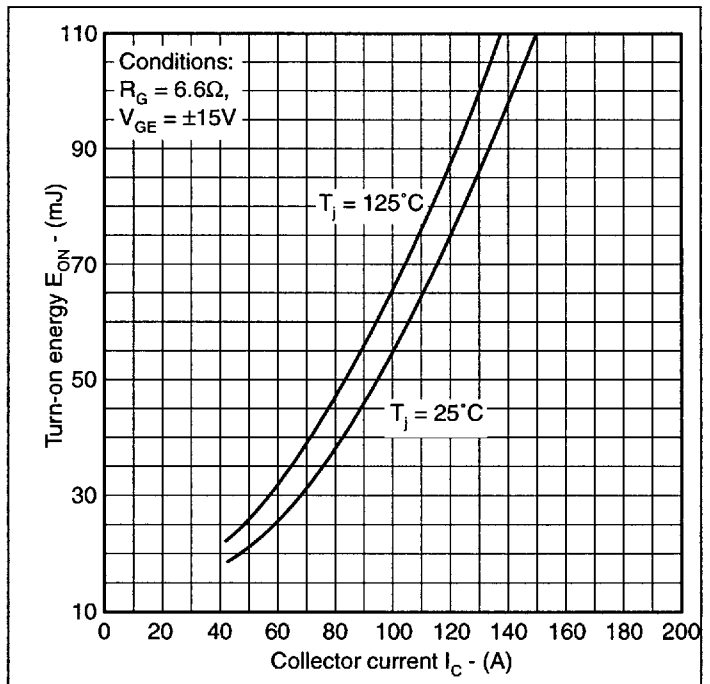


Fig.8 Typical turn-on losses

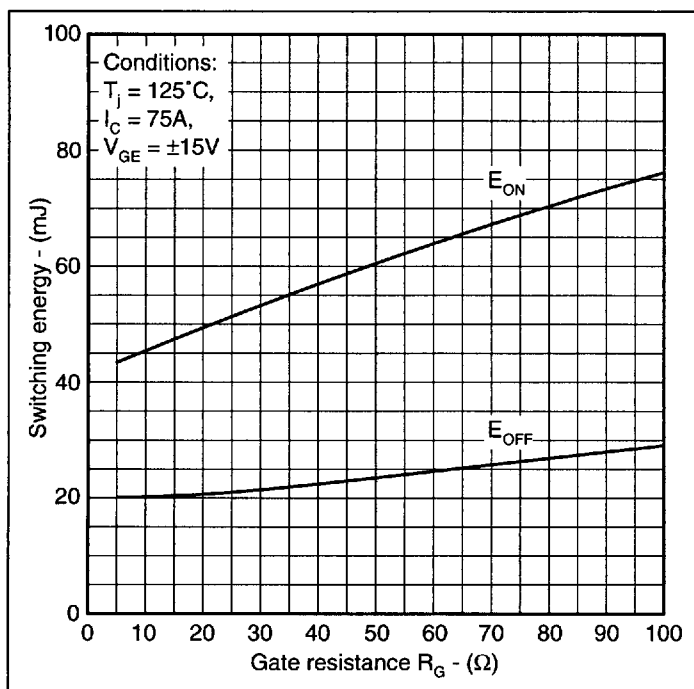


Fig.9 Typical switching energy

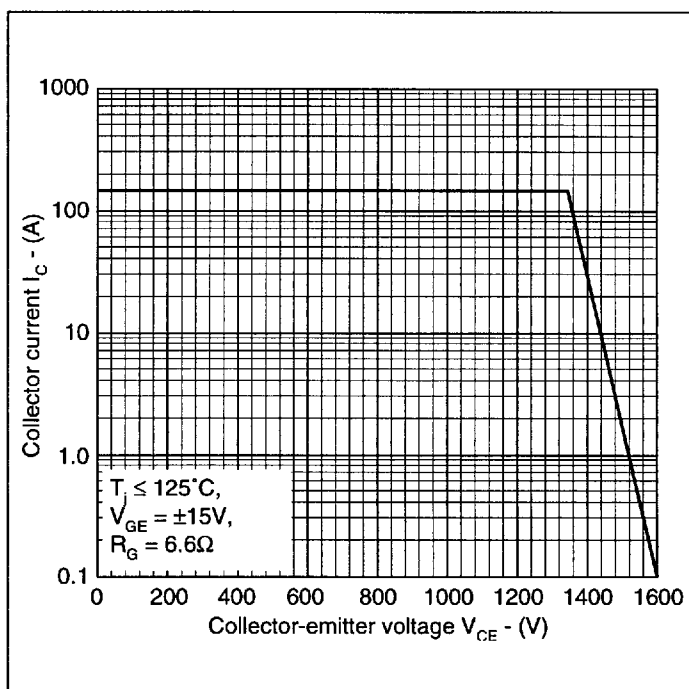


Fig.10 Reverse bias safe operating area

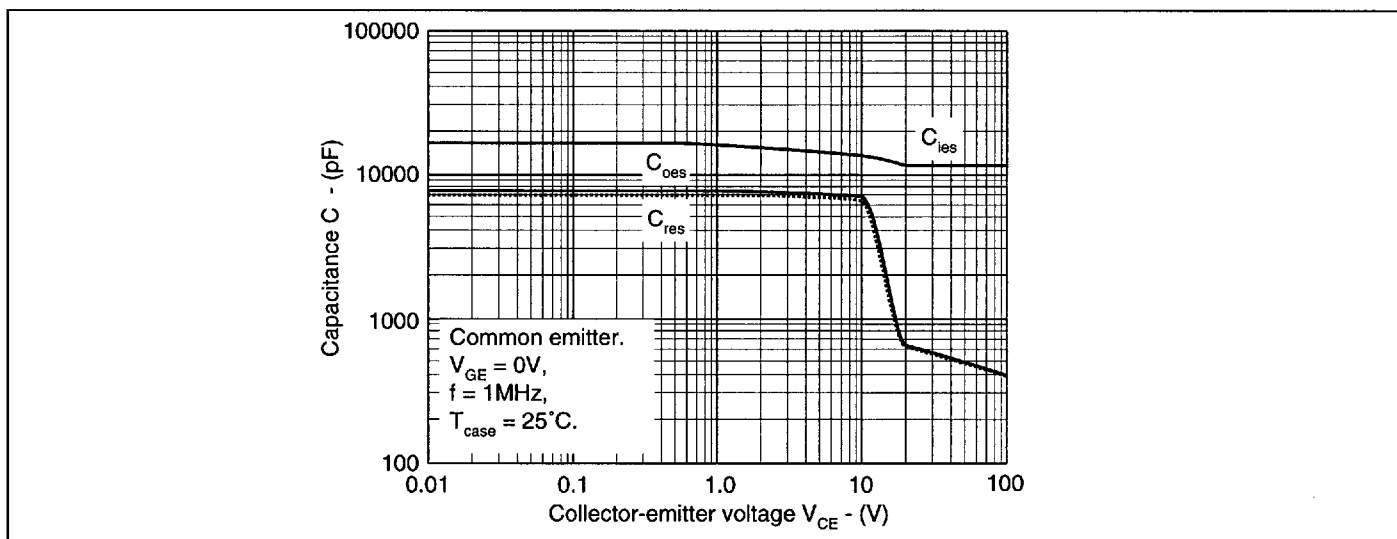
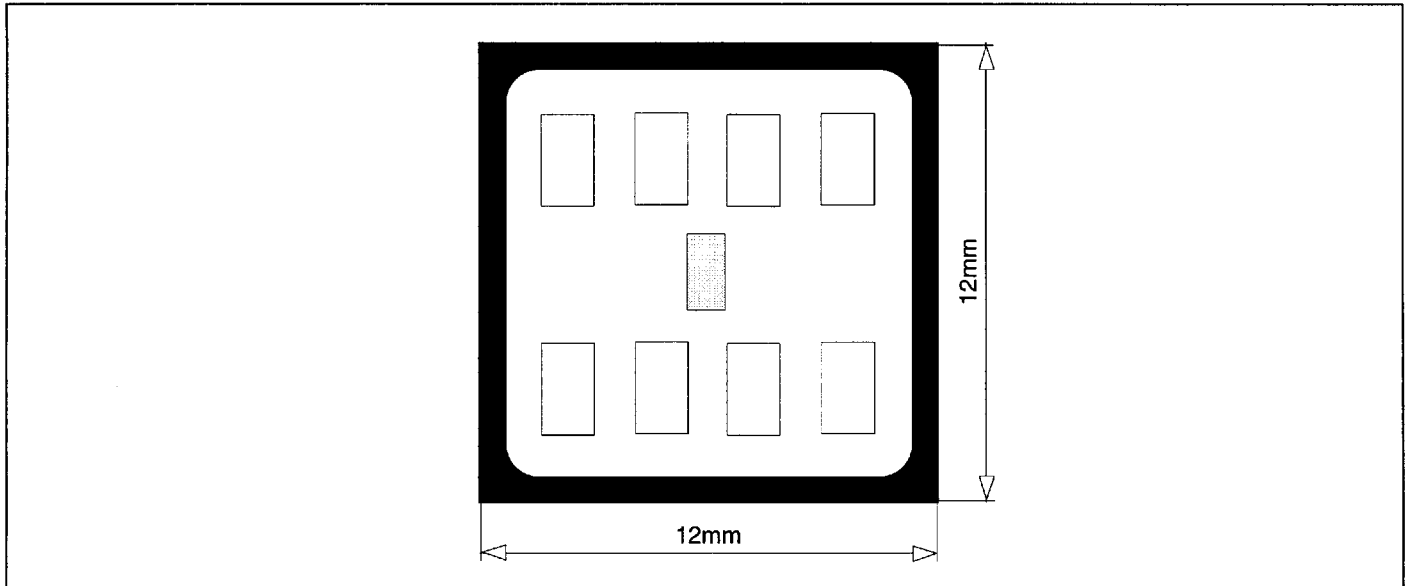


Fig.11 Typical capacitance

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CHIP DETAILS

All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Typical chip thickness: 600 μ m.

Wire sizes: 8 bondwires \geq 300 μ m .

Composition of wire: 99.999% Aluminium.

Back metal: Aluminium, Titanium, Nickel, Silver.

T_{max} for chip **NOT** to exceed 275°C for more than 15 minutes during soldering, using 96S solder.

Packing for shipment is either membrane or waffle tray.

Static sensitive device - observe static handling precautions.



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