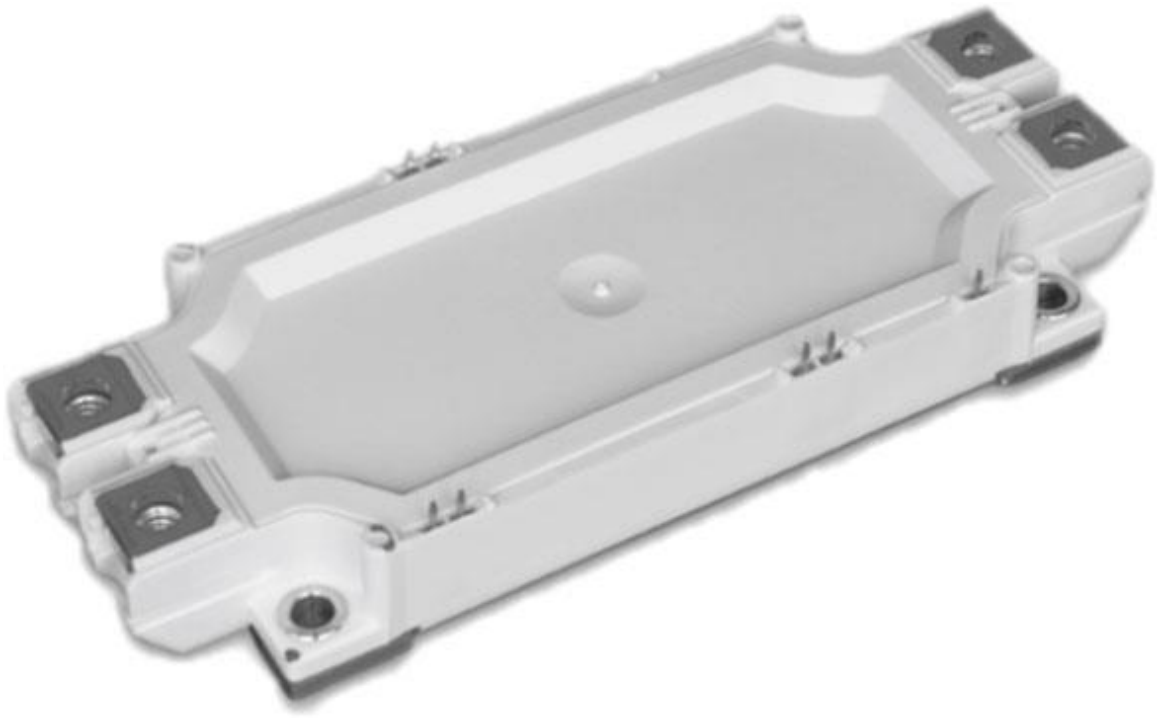
TECHNICAL DATA
DATASHEET 6206, Preliminary

650V, 600A Half Bridge IGBT Module



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Collector to Emitter Voltage	Vces		650	V
Gate to Emitter Voltage	Vges	-20	20	V
IGBT continuous current at Tc=25C	Icigbt25		800	A
IGBT continuous current at Tc=75C	Icigbt75		600	A
IGBT pulse current at Tc=25C	Ipulseigbt25		2400	A
Short Circuit duration, Vce=360V, Tj=150C, Vge=15V	tsc		10	µs
Junction Temperature	Tj	-55	175	◦C
Diode continuous current at Tc=25C	Icdiode25		600	A
Diode pulse current at Tc=25C	Ipulsediode25		1200	A

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
IGBT					
BVces	Breakdown voltage, Ic = 1mA, Vge=0V	650			V
Vgeth	Threshold voltage, Ic=1mA, Vce=Vge	4.0		6.5	V
Ices	Vce=650V, Vge=0V			100	µA
Ices150	Vce=650V, Vge=0V, Tj=150C			5	mA
Iges	Gate leakage current, Vce=0V, Vge=20V			1	µA
Cies	Vce=25V, Vge=0V, f=1MHz		24.6		nF
Coes	Vce=25V, Vge=0V, f=1MHz		1.5		nF
Cres	Vce=25V, Vge=0V, f=1MHz		0.9		nF
Qgon	Ic=480A, Vge=15V, Vce=325V		1300		nC
Qge	Ic=480A, Vge=15V, Vce=325V		240		nC
Qgc	Ic=480A, Vge=15V, Vce=325V		580		nC
tdon	Inductive load, Ic=240A, Vge=15V, Vce=400V		52		ns
trise	Inductive load, Ic=240A, Vge=15V, Vce=400V		64		ns
tdoff	Inductive load, Ic=240A, Vge=15V, Vce=400V		220		ns
tfall	Inductive load, Ic=240A, Vge=15V, Vce=400V		90		ns
Rth	Thermal resistance, junction to case			0.6	◦C/W
Anti-parallel Diode					
Vf25	Forward voltage, Tj=25C		1.55	1.95	V
Vf125	Forward voltage, Tj=125C		1.50		V
Irm25	Peak reverse recovery current, If=600A, di/dt=6000A/us, Vr=300V, Vge=-15V, Tj=25C		205		A
Irm125	Peak reverse recovery current, If=600A, di/dt=6000A/us, Vr=300V, Vge=-15V, Tj=125C		300		A
Qr25	Recovered charge, If=600A, di/dt=6000A/us, Vr=300V, Vge=-15V, Tj=25C		17		µC
Qr125	Recovered charge, If=600A, di/dt=6000A/us, Vr=300V, Vge=-15V, Tj=125C		36		µC
Rth	Thermal resistance, junction to case			1.1	◦C/W

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NTC Thermistor Characteristics (Heraeus Nexensos M Sensor)

R_0	Resistance @ T_C = 0 °C		1		K Ohm
R_{TOL}	Resistance Tolerance			±0.12	%
	Measuring Current	0.1		0.3	mA
TCR	$TCR = \frac{R_{100} - R_0}{R_0 * 100°C}$ R_{100} is resistance at 100ºC, R_0 is resistance at 0°C		3850		ppm/K
	Temperature Range	-70		500	°C
Resistance vs Temperature	t >= 0 º $R(t) = R_0 * (1 + A * t + B * t^2$ t < 0 ºC $R(t) = R_0 * (1 + A * t + B * t^2 + C * (t - 100°C) * t^3)$;	$A = 3.9083 * 10^{-3}$ ºC^{-1} $B = -5.775 * 10^{-7}$ °C^{-2} $C = -4.183 * 10^{-12}$ ºC^{-4}			

Fig. 1. Output Characteristics @ T_J = 25ºC

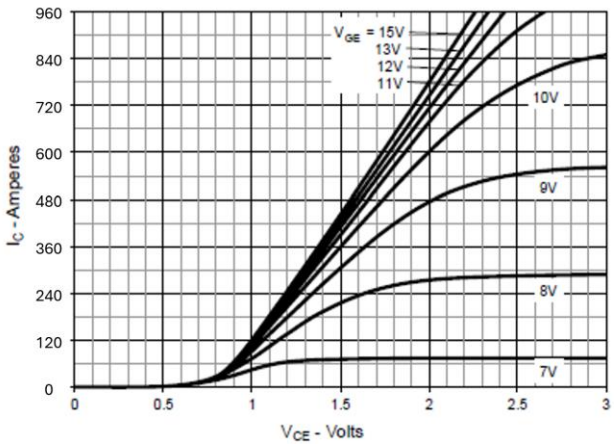


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

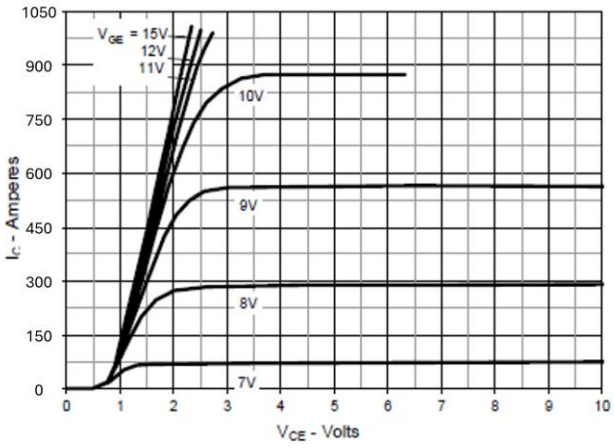


Fig. 3. Input Admittance

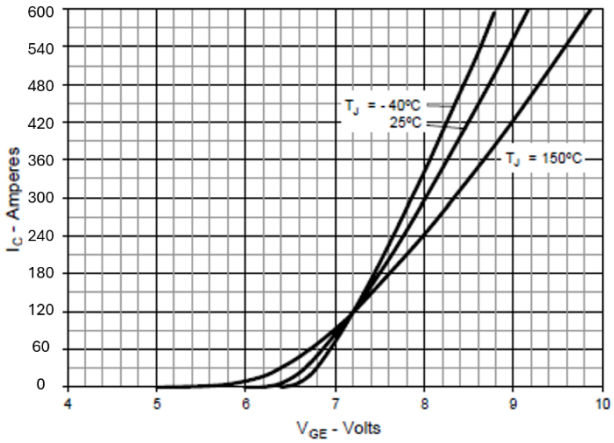


Fig. 4. Gate Charge

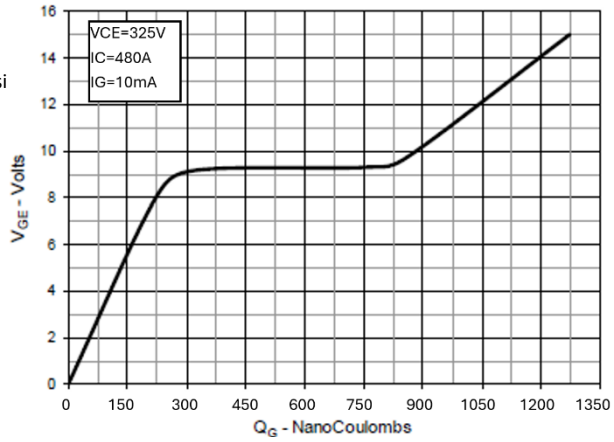


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

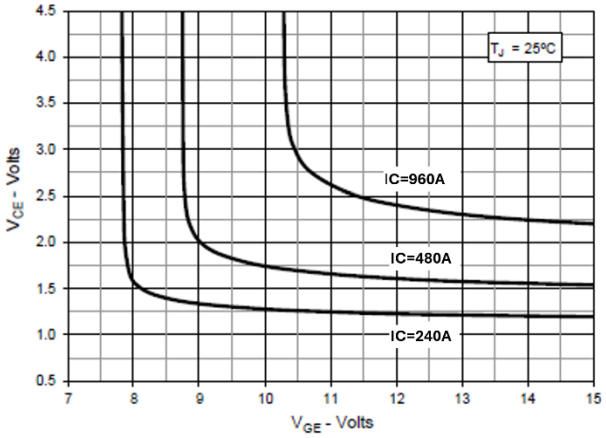


Fig. 6. Transconductance

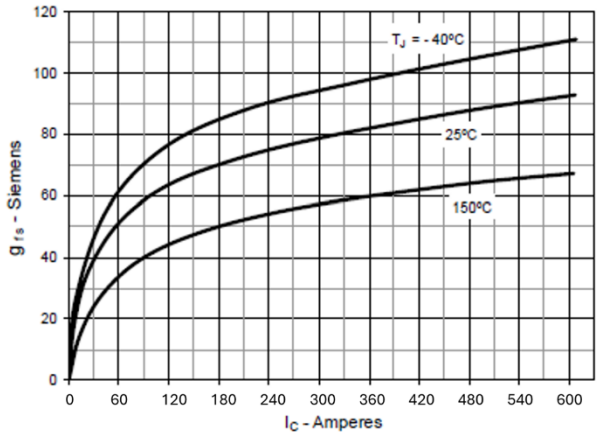
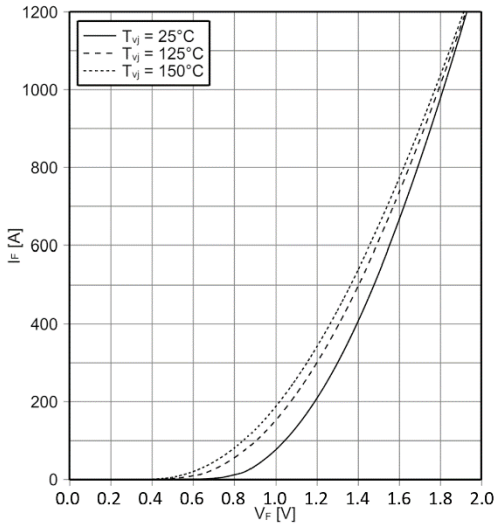
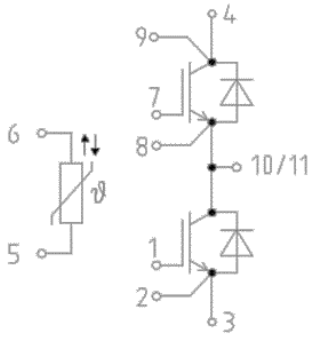


Fig. 7 Diode forward characteristics





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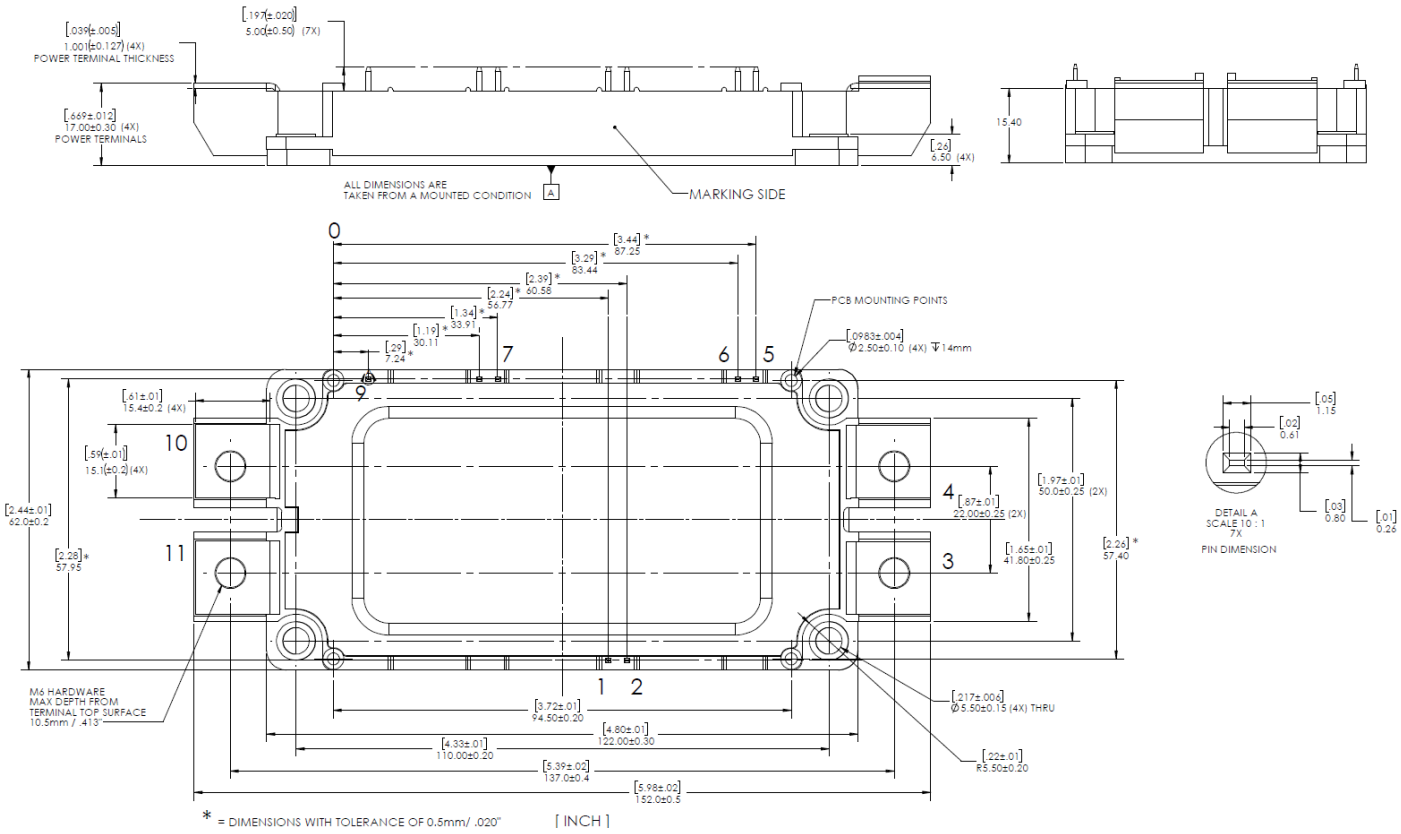
MECHANICAL DIMENSIONS:



Thermal interface material is recommended between base and heatsink.