Ordering number : ENN7016

NPN Epitaxial Planar Silicon Transistor

MCH3211

DC / DC Converter Applications

Applications

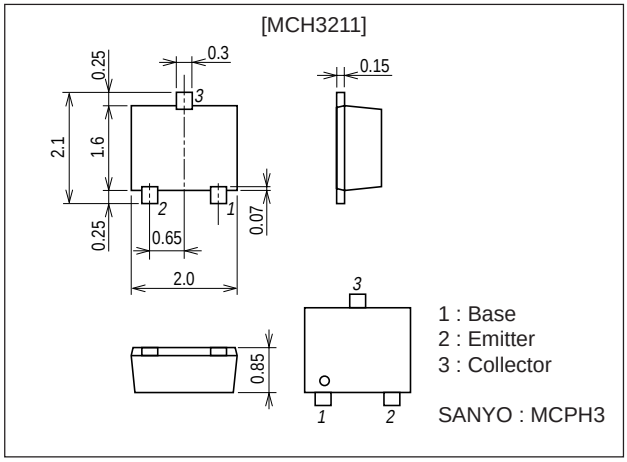
- Relay drivers, lamp drivers, motor drivers, strobes.

Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultraminiature package facilitates miniaturization in end products. (mounting height : 0.85mm).
- High allowable power dissipation.

Package Dimensions

unit : mm
2194A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		10	V
Emitter-to-Base Voltage	V_{EBO}		5	V
Collector Current	I_C		3	A
Collector Current (Pulse)	I_{CP}		5	A
Base Current	I_B		600	mA
Collector Dissipation	P_C	Mounted on a ceramic board(600mm²×0.8mm)	0.8	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=12V, I_E=0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0			0.1	μA
DC Current Gain	h_{FE}	V_{CE}=2V, I_C=500mA	600			
Gain-Bandwidth Product	f_T	V_{CE}=2V, I_C=500mA		380		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		23		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=1.5A, I_B=30mA		100	150	mV
	V_{CE}(sat)2	I_C=3A, I_B=60mA		180	270	mV

Marking : CG

Continued on next page.

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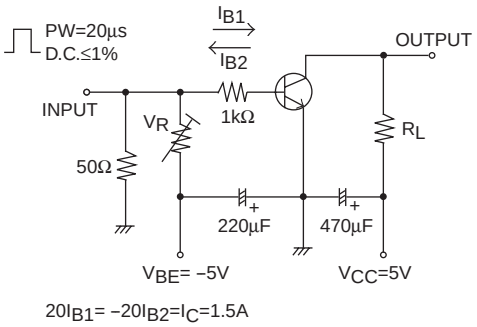
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

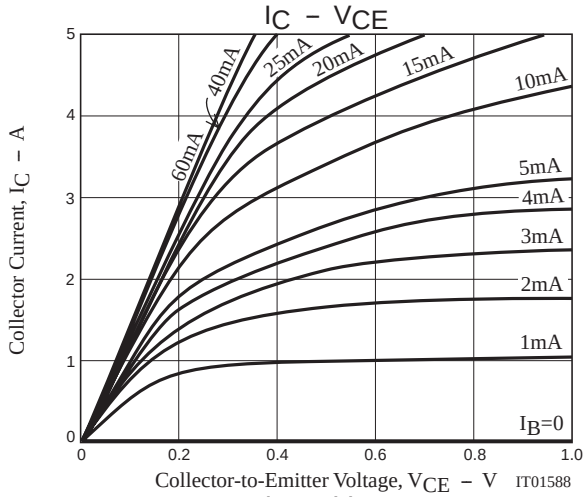
Continued from preceding page.

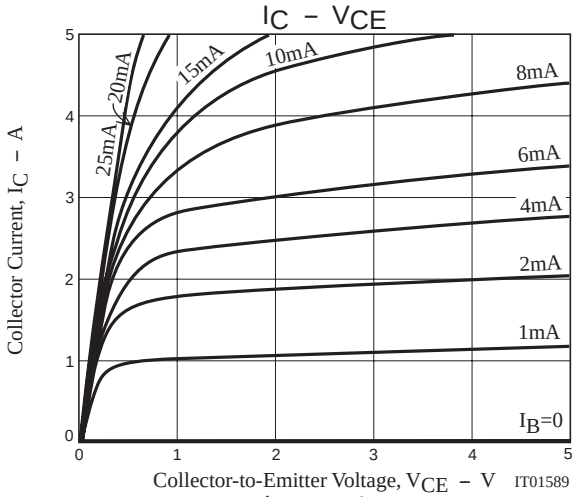
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Saturation Voltage	$V_{BE}(sat)$	I_C=1.5A, I_B=30mA		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	10			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		30		ns
Storage Time	t_{stg}	See specified Test Circuit.		210		ns
Fall Time	t_f	See specified Test Circuit.		11		ns

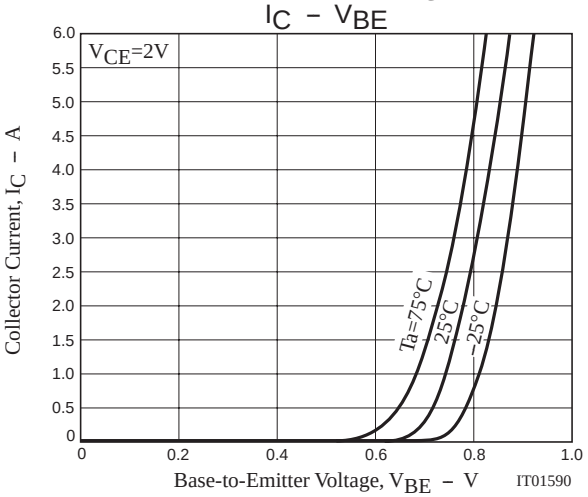
Switching Time Test Circuit

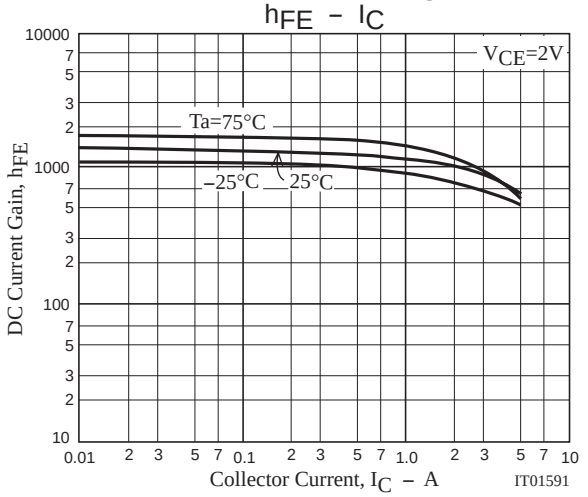


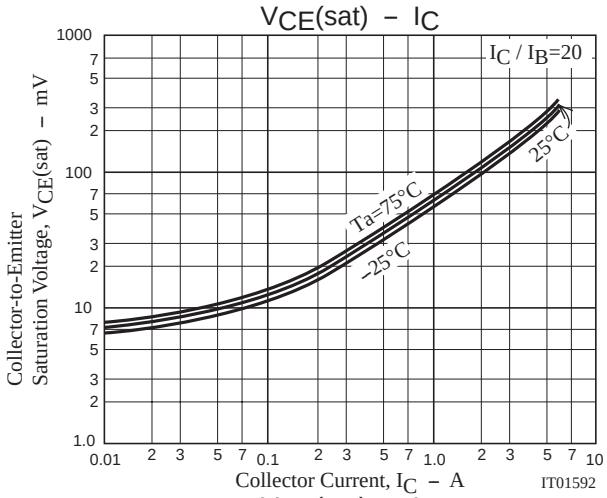
$20I_{B1}=-20I_{B2}=I_C=1.5A$

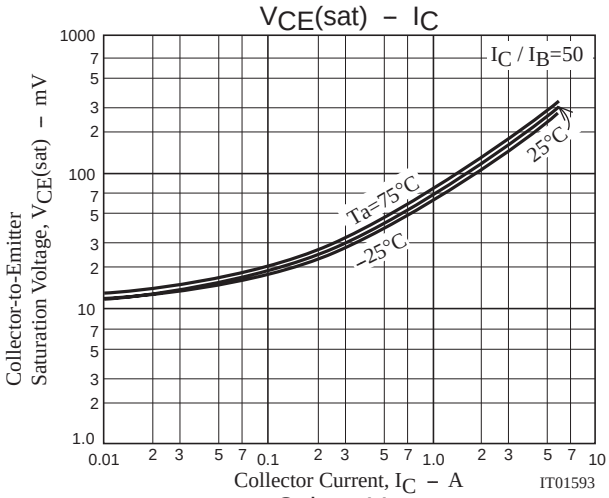


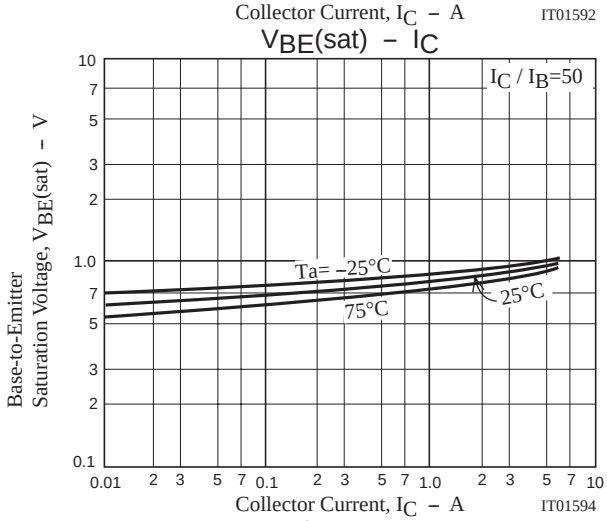


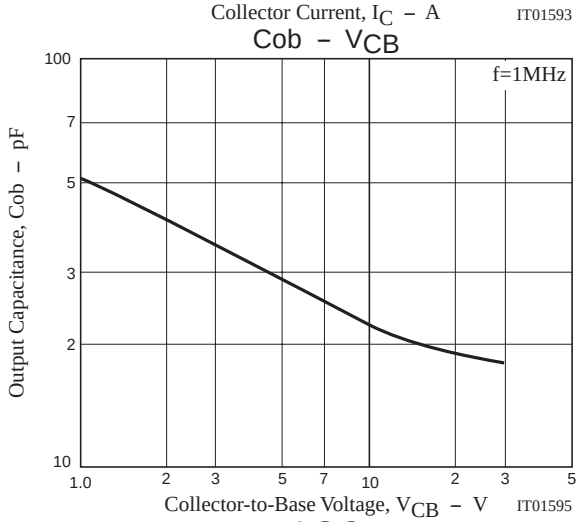


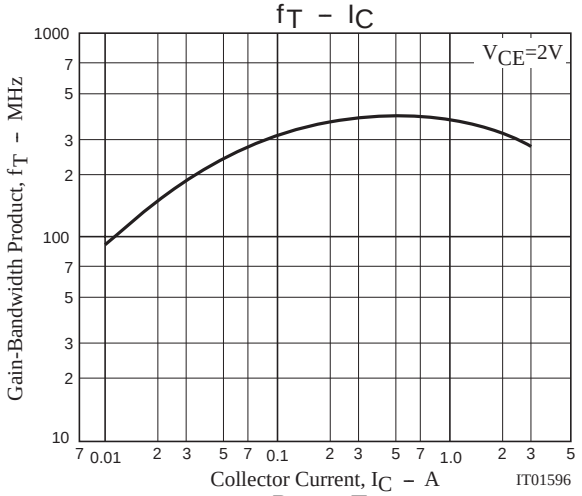


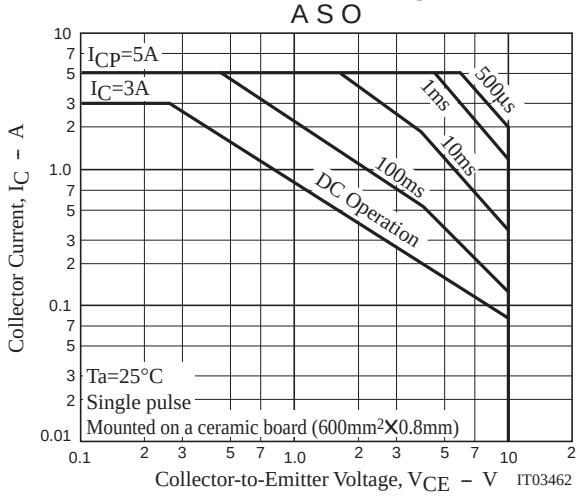

VCE(sat) – IC
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01592

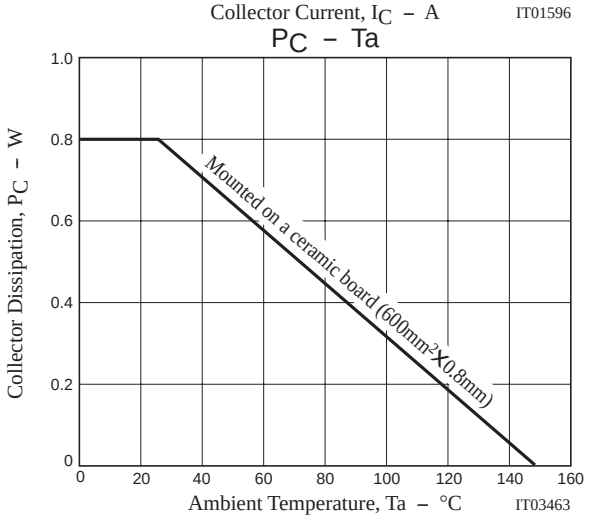

VCE(sat) – IC
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01593


VBE(sat) – IC
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT01594


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01595


fT – IC
VCE=2V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01596


A S O
ICP=5A
IC=3A
1ms
500µs
10ms
100ms
DC Operation
Ta=25°C
Single pulse
Mounted on a ceramic board (600mm2X0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT03462


PC – Ta
Mounted on a ceramic board (600mm2X0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT03463