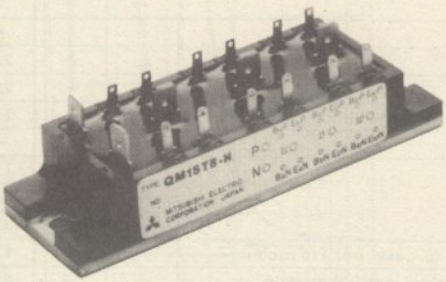
QM15TB-H

MEDIUM POWER SWITCHING USE
INSULATED TYPE

QM15TB-H



- I_C Collector current 15A
- V_{CEX} Collector-emitter voltage 600V
- h_{FE} DC current gain 50
- Insulated Type
- UL Recognized Yellow Card No.; E80276(M)
  File No.; E80271

OUTLINE DRAWING Dimensions in mm

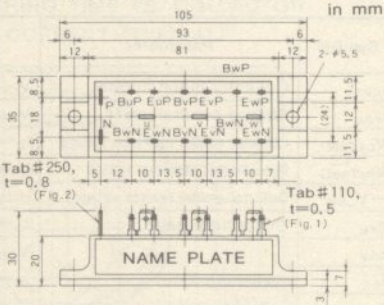
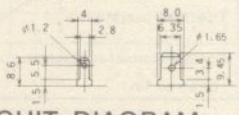
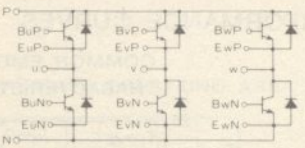


Fig. 1 Fig. 2



CIRCUIT DIAGRAM



Note : All Transistor Units are Darlingtons.

APPLICATION

Air conditioner, Small to medium size inverters, CVCF

ABSOLUTE MAXIMUM RATINGS (T_j=25℃)

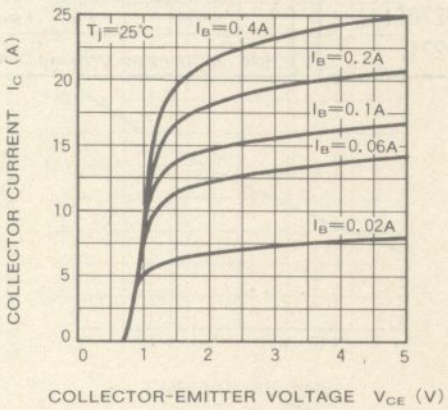
Symbol	Parameter	Conditions	Ratings	Unit
$V_{CEX(SUS)}$	Collector-emitter voltage	I_C=1A, V_{EB}=2V	600	V
V_{CEX}	Collector-emitter voltage	V_{EB}=2V	600	V
V_{CBO}	Collector-base voltage	Emitter open	600	V
V_{EBO}	Emitter-base voltage	Collector open	5	V
I_C	Collector current	DC	15	A
$-I_C$	Reverse collector current (forward diode current)	DC	15	A
P_C	Collector dissipation	T_C=25℃	100	W
I_B	Base current	DC	0.9	A
$-I_{CSM}$	Reverse surge current (forward diode current)	Peak value of one cycle of 60Hz (half wave)	150	A
T_j	Junction temperature		−40~+150	℃
T_{stg}	Storage temperature		−40~+125	℃
V_{isol}	Isolation voltage	AC for 1 minute	2500	V
—	Mounting torque	M5 mounting screw	15~20	kg·cm
—	Weight	Typical value	190	g

ELECTRICAL CHARACTERISTICS (T_j=25℃)

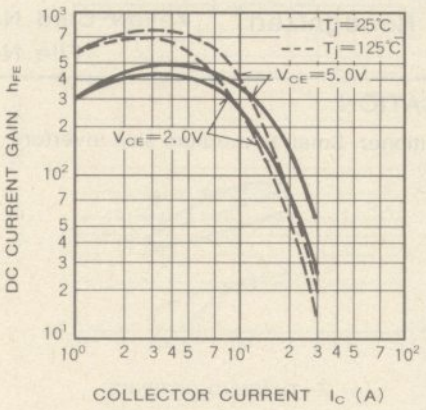
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CEX}	Collector cutoff current	$V_{CE}=V_{CEX}$, V_{EB}=2V	—	—	1	mA
I_{EBO}	Emitter cutoff current	V_{EB}=7V	—	—	80	mA
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C=15A, I_B=0.3A	—	—	2.0	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_C=15A, I_B=0.3A	—	—	2.5	V
$-V_{CEO}$	Collector-emitter reverse voltage	$-I_C$=15A(diode forward voltage drop)	—	—	1.5	V
h_{FE}	DC current gain	I_C=15A, V_{CE}=2V/5V	50/100	—	—	—
t_{on}	Switching time	V_{CC}=300V	—	—	1.5	μs
t_s		I_C=15A	—	—	8.0	μs
t_f		$I_{B1}=-I_{B2}$=0.3A	—	—	3.0	μs
$R_{th(j-c)Q}$	Thermal resistance	Transistor part, junction to case, per 1/6 module	—	—	1.2	℃/W
$R_{th(j-c)R}$		Diode part, junction to case, per 1/6 module	—	—	2.5	℃/W
$R_{th(c-f)}$	Contact thermal resistance (case to fin)	Conductive grease applied, per 1/6 module	—	—	0.4	℃/W

PERFORMANCE CURVES

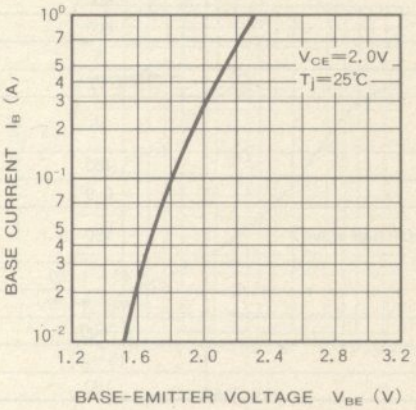
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



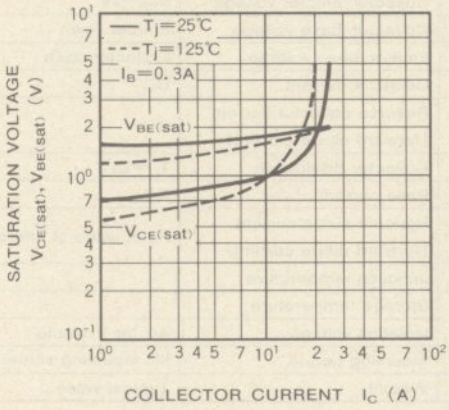
DC CURRENT GAIN VS. COLLECTOR CURRENT (TYPICAL)



COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)

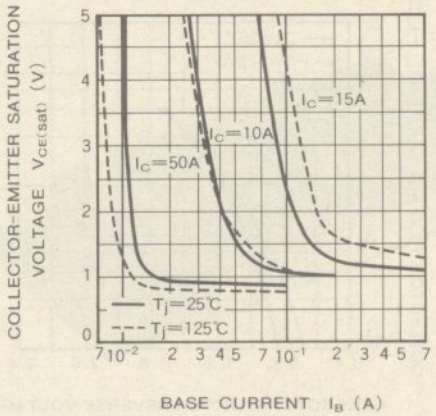


SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)

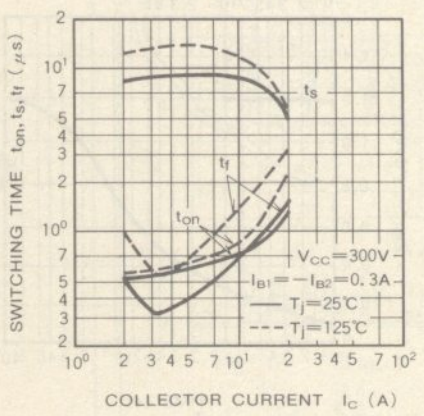


MITSUBISHI ELECTRIC

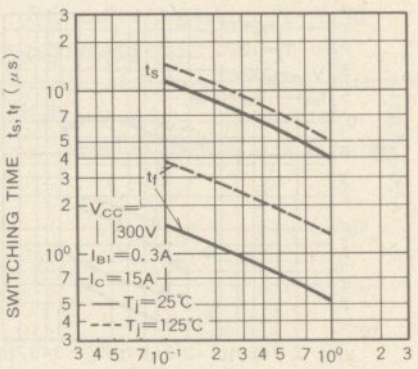
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



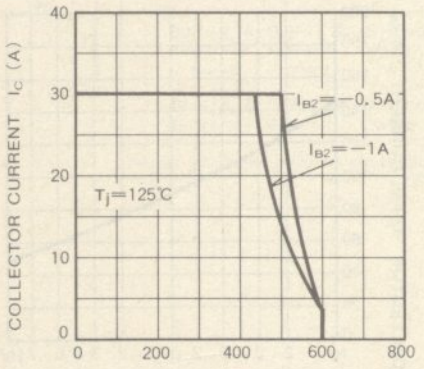
SWITCHING TIME VS. COLLECTOR CURRENT (TYPICAL)



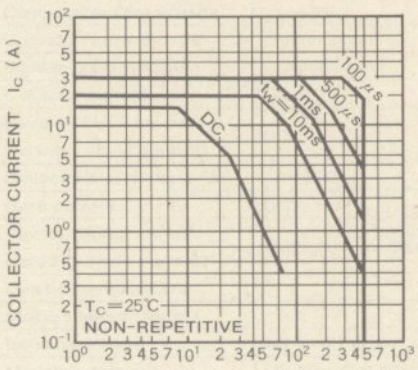
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



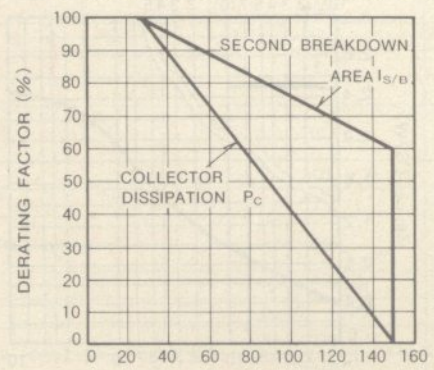
REVERSE BIAS SAFE OPERATING AREA



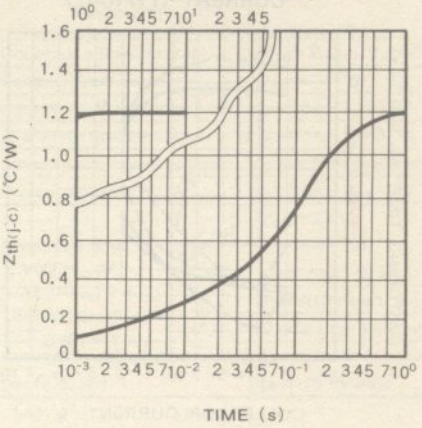
FORWARD BIAS SAFE OPERATING AREA



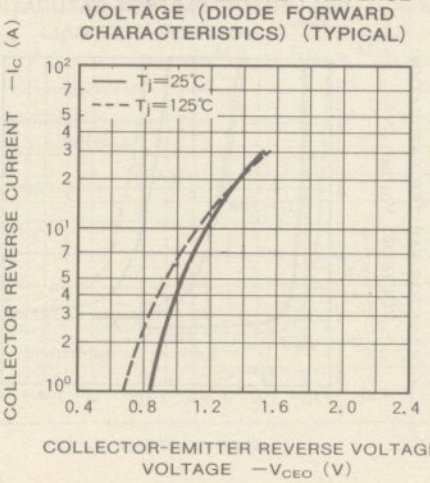
DERATING FACTOR OF F.B.S.O.A.



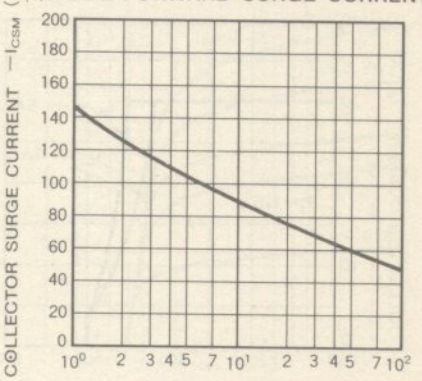
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



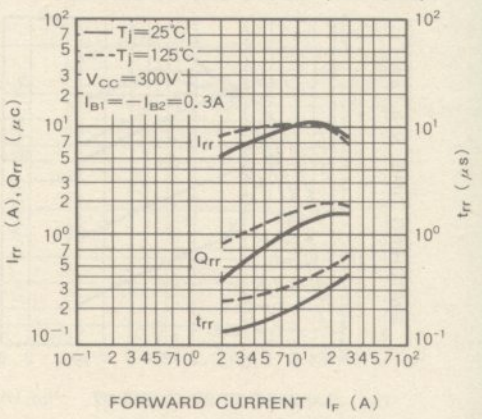
REVERSE COLLECTOR CURRENT VS. COLLECTOR-EMITTER REVERSE VOLTAGE (DIODE FORWARD CHARACTERISTICS) (TYPICAL)



RATED COLLECTOR SURGE CURRENT (DIODE FORWARD SURGE CURRENT)



REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)