General purpose transistor (isolated transistor and diode)

QSZ3

A 2SB1705 and a 2SD2670 are housed independently in a TSMT5 package.

●Applications

DC / DC converter
Motor driver

●Features

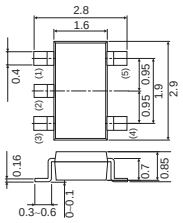
1) Low V_{CE}(sat)
2) Small package

●Structure

Silicon epitaxial planar transistor

●External dimensions (Unit : mm)

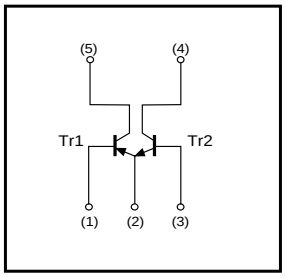
QSZ3



ROHM : TSMT5 Each lead has same dimensions

Abbreviated symbol : Z03

●Equivalent circuit



●Packaging specifications

Type	QSZ3
Package	TSMT5
Marking	Z03
Code	TR
Basic ordering unit(pieces)	3000

●Absolute maximum ratings (Ta=25°C)

Tr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	–15	V
Collector-emitter voltage	V_{CEO}	–12	V
Emitter-base voltage	V_{EBO}	–6	V
Collector current	I_C	–3	A
	I_{CP}	–6	A *1
Power dissipation	Pc	500	mW/Total *2
		1.25	W/Total *3
		0.9	W/Element *3
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	–55 to +150	°C

*1 Single pulse, Pw=1ms.
*2 Each terminal mounted on a recommended land.
*3 Mounted on a 25×25× t 0.8mm ceramic substrate.

Tr 2

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	15	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	3	A
	I_{CP}	6	A *1
Power dissipation	Pc	500	mW/Total *2
		1.25	W/Total *3
		0.9	W/Element *3
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	–50 to +150	°C

*1 Single pulse, Pw=1ms.
*2 Each terminal mounted on a recommended land.
*3 Mounted on a 25×25× t 0.8mm ceramic substrate.

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–15	–	–	V	I_C= –10μA
Collector-emitter breakdown voltage	BV_{CEO}	–12	–	–	V	I_C= –1mA
Emitter-base breakdown voltage	BV_{EBO}	–6	–	–	V	I_E= –10μA
Collector cutoff current	I_{CBO}	–	–	–100	nA	V_{CB}= –15V
Emitter cutoff current	I_{EBO}	–	–	–100	nA	V_{EB}= –6V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–120	–250	mV	I_C= –1.5A, I_B= –30mA
DC current gain	h_{FE}	270	–	680	–	V_{CE}= –2V, I_C= –500mA*
Transition frequency	f_T	–	280	–	MHz	V_{CE}= –2V, I_E=500mA, f=100MHz*
Collector output capacitance	Cob	–	30	–	pF	V_{CB}= –10V, I_E=0A, f=1MHz

* Pulsed

Tr 2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	15	–	–	V	I_C=10μA
Collector-emitter breakdown voltage	BV_{CEO}	12	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	6	–	–	V	I_E=10μA
Collector cutoff current	I_{CBO}	–	–	100	nA	V_{CB}=15V
Emitter cutoff current	I_{EBO}	–	–	100	nA	V_{EB}=6V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	120	250	mV	I_C=1.5A, I_B=30mA
DC current gain	h_{FE}	270	–	680	–	V_{CE}=2V, I_C=500mA*
Transition frequency	f_T	–	360	–	MHz	V_{CE}=2V, I_E= –500mA, f=100MHz*
Collector output capacitance	Cob	–	30	–	pF	V_{CB}=10V, I_E=0A, f=1MHz

* Pulsed

●Electrical characteristic curves

Tr1(PNP)

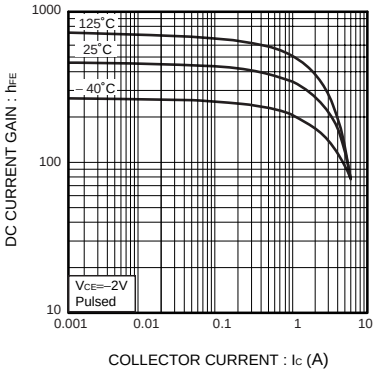


Fig1. DC current gain vs. collector current

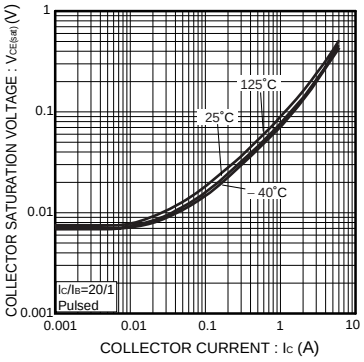


Fig.2 Collector-emitter saturation voltage vs. collector current

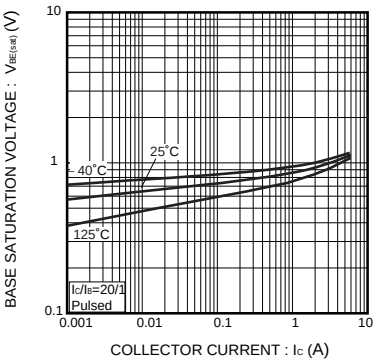


Fig.3 Base–emitter saturation voltage vs.collector current

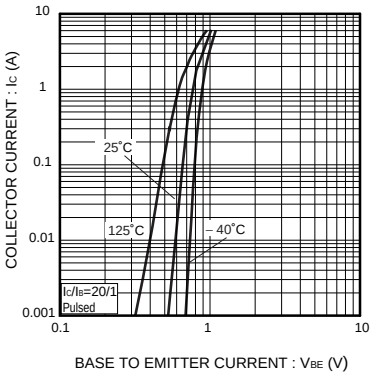


Fig.4 Grounded emitter propagation charactereistics

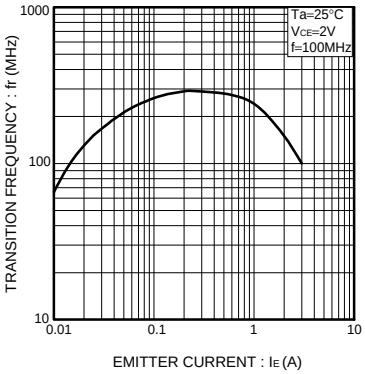


Fig.5 Gain bandwidth product vs. emitter current

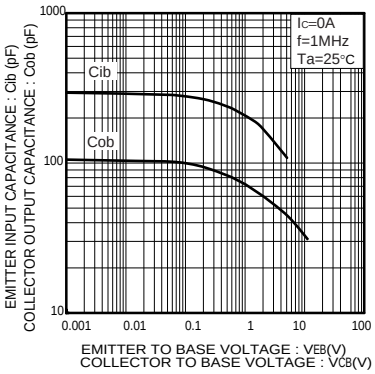


Fig 6. Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base volatage

Tr2(NPN)

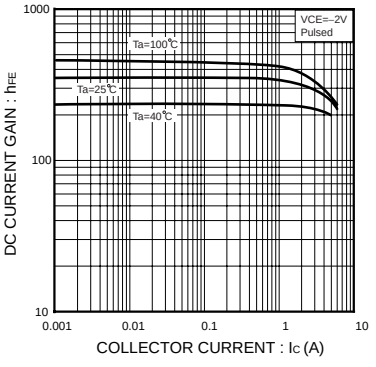


Fig.7 DC current gain vs. collector current

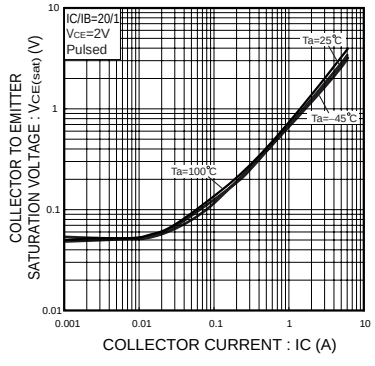


Fig.8 Collector-emitter saturation voltage vs. collector current

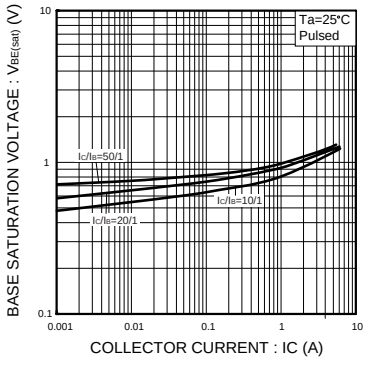


Fig.9 Base-emitter saturation voltage vs.collector current

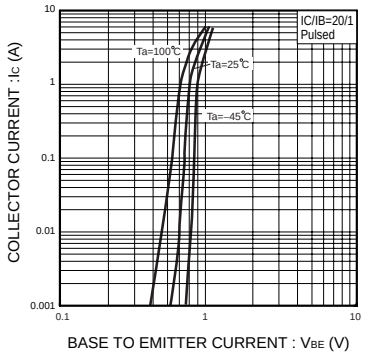


Fig.10 Grounded emitter propagation characteristics

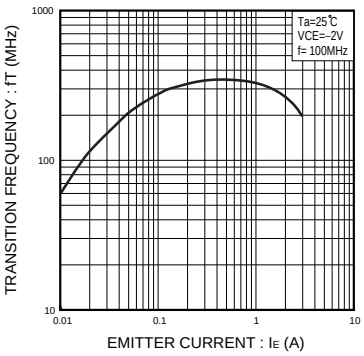


Fig.11 Gain bandwidth product vs. emitter current

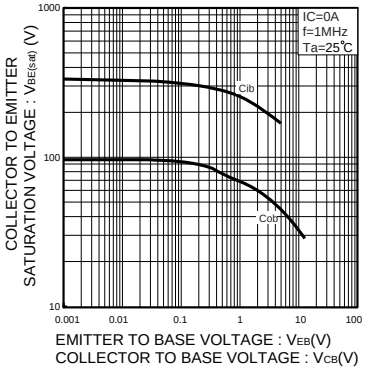


Fig.12 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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