Dual digital transistors

QSH29

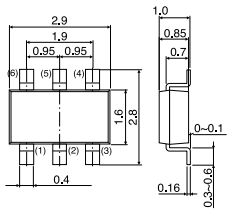
●Features

In addition to the standard features of digital transistor, this transisitor has:

1) Low collector saturation voltage, typically
   $V_{CE\,(sat)}$=100mV for I_C / I_B=100mA / 1mA(Typ.)
2) High current gain, minimum
   h_{FE}=500mA for V_{CE}=5V, I_C=200mA.
3) Built in Zener diode for protection against surges when connected to inductive load.

●Dimensions (Unit : mm)

TSMT6



Abbreviated symbol : H29

●Structure

NPN silicon epitaxial planar transistor

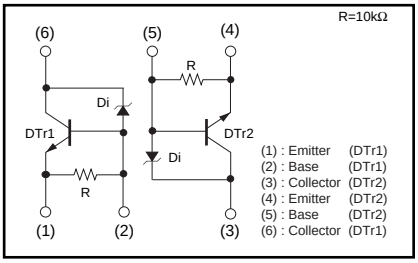
●Applications

Driver

●Packaging specifications and h_{FE}

Type	Package	TSMT6
	Packaging type	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
QSH29		○

●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

≪DTr1≫ ≪DTr2≫

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	60±10	V
Collector-emitter voltage		V_{CEO}	60±10	V
Emitter-base voltage		V_{EBO}	5	V
Collector current	Continuous	I_C	500	mA
	Pulsed	I_{CP}	1	A ∗1
Power dissipation		P_D	1.25	W/TOTAL ∗2
			0.9	W/1 ELEMENT ∗2
Junction temperature		Tj	150	°C
Range of storage temperature		Tstg	–55 to +150	°C

∗1 Pw=10ms 1 Pulse
∗2 Each terminal mounted on a ceramic board

●**Electrical characteristics** (Ta=25°C)

≪DTr1≫ ≪DTr2≫

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	50	–	70	V	I_C=50μA
Collector-base breakdown voltage	BV_{CBO}	50	–	70	V	I_C=50μA
Emitter-base breakdown voltage	BV_{EBO}	5.0	–	–	V	I_E=720μA
Collector cut-off current	I_{CBO}	–	–	0.5	μA	V_{CB}=40V
Emitter cut-off current	I_{EBO}	300	–	580	μA	V_{EB}=4V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	100	300	mV	I_C=100mA, I_B=1mA
DC current gain	h_{FE}	500	–	–	–	V_{CE}=5V, I_C=200mA
Emitter-base resistance	R	7	10	13	kΩ	–

●**Electrical characterristic curves**

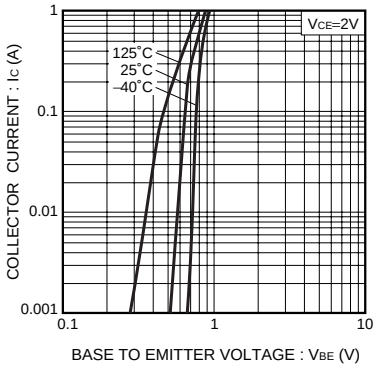


Fig.1 Grounded Emitter Propagation Characteristics

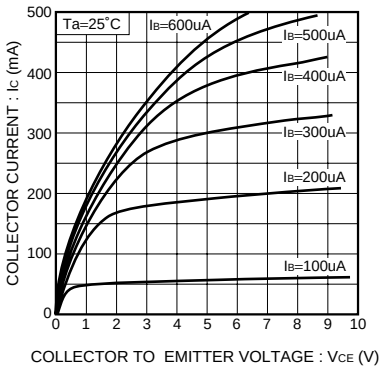


Fig.2 Typical Output Characteristics

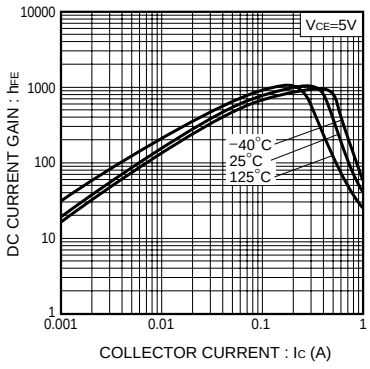


Fig.3 DC Current Gain vs. Collector Current

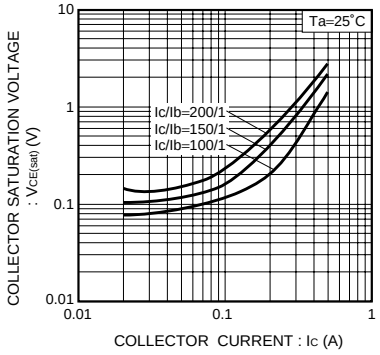


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (Ⅰ)

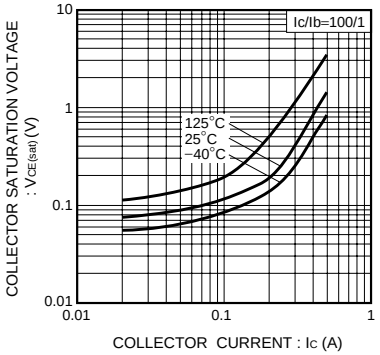


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (Ⅱ)

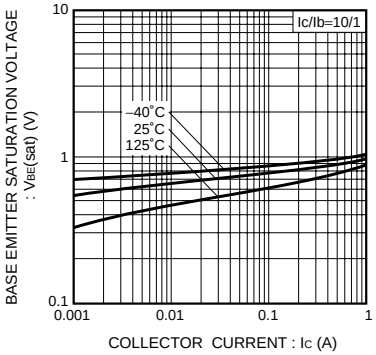


Fig.6 Base-emitter Saturation Voltage vs. Collector Current

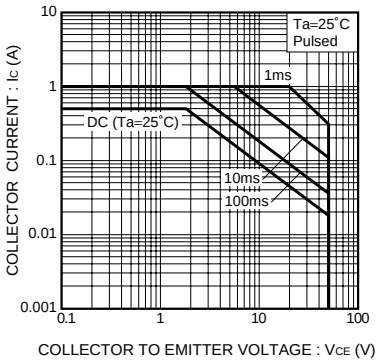


Fig.7 Safe Operating Area

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