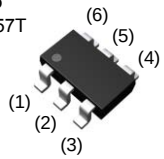
QSH29

NPN 500mA 60V Complex Digital Transistors (Bias Resistor Built-in Transistors) Datasheet

Parameter	Value
V_{CEO}	60V
I_C	500mA
R	10kΩ

●Outline

TSMT6
SOT-457T

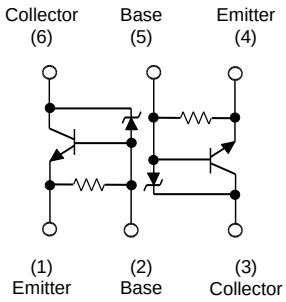


QSH29
(SC-95)

●Features

1) Built-In Biasing Resistors
2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
4) Lead Free/RoHS Compliant.

●Inner circuit



●Application

Switching circuit, Inverter circuit, Interface circuit,
Driver circuit

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
QSH29	TSMT6	2928	TR	180	8	3,000	H29

●**Absolute maximum ratings** (Ta = 25°C)

Parameter	Symbol	Values	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	I_C	500	mA
Collector current (P_W=10ms, single pulse)	I_{CP}	1	A
Power dissipation	P_D *1	1.25 (Total)*2	W
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	−55 to +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	BV_{CBO}	I_C= 50μA	50	-	70	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C= 50μA	50	-	70	V
Emitter-base breakdown voltage	BV_{EBO}	I_E= 720μA	5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 40V	-	-	0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	300	-	580	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C / I_B= 100mA / 1mA	-	0.1	0.3	V
DC current gain	h_{FE}	V_{CE}= 5V, I_C= 0.2A	500	-	-	-
Emitter-base resistance	R	-	7	10	13	kΩ

*1 Mounted on a ceramic substrate.

*2 0.9W per element must not be exceeded.

●**Electrical characteristic curves**(Ta = 25°C)

Fig.1 Grounded emitter propagation characteristics

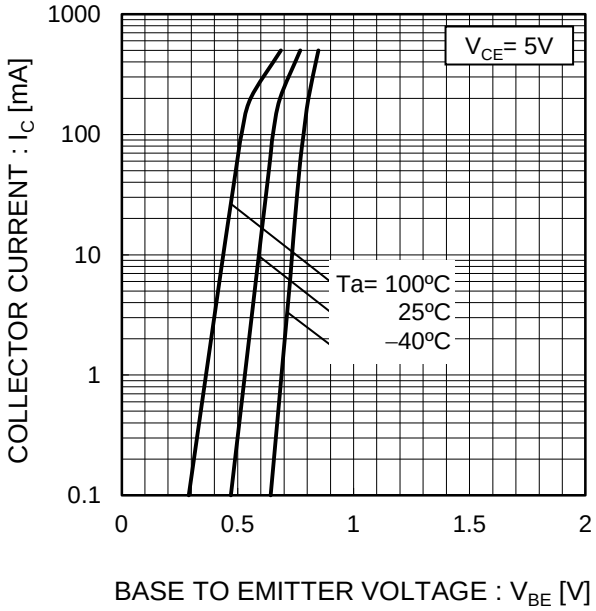


Fig.2 Grounded emitter output characteristics

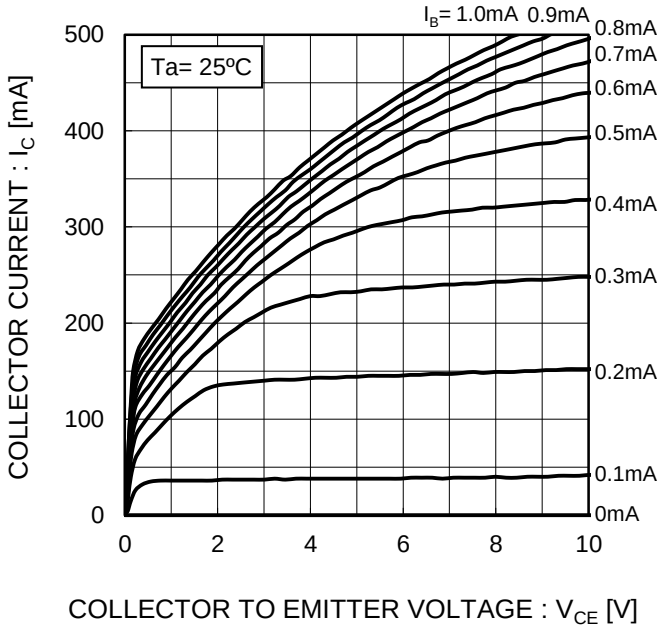


Fig.3 DC Current gain vs. Collector Current

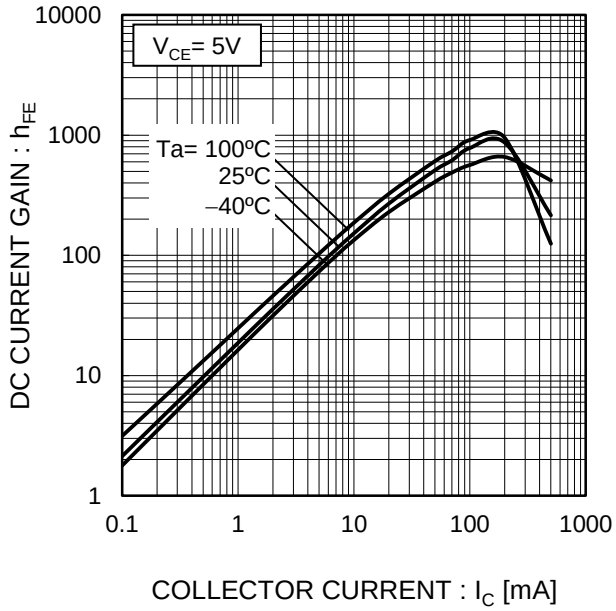
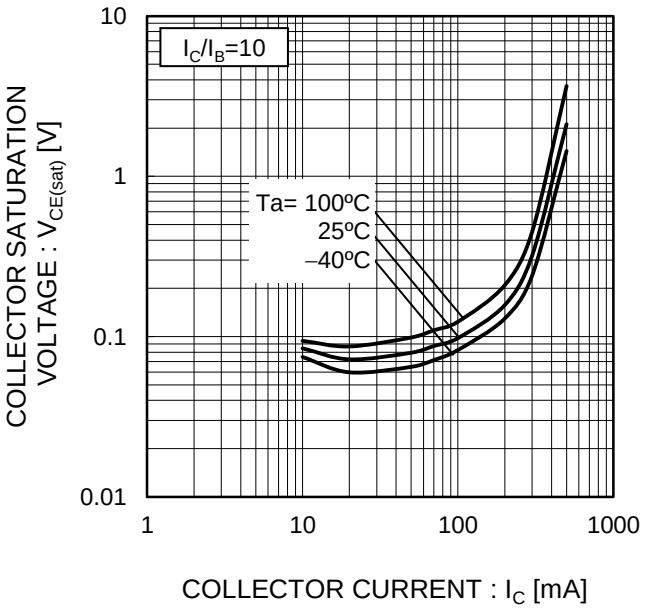
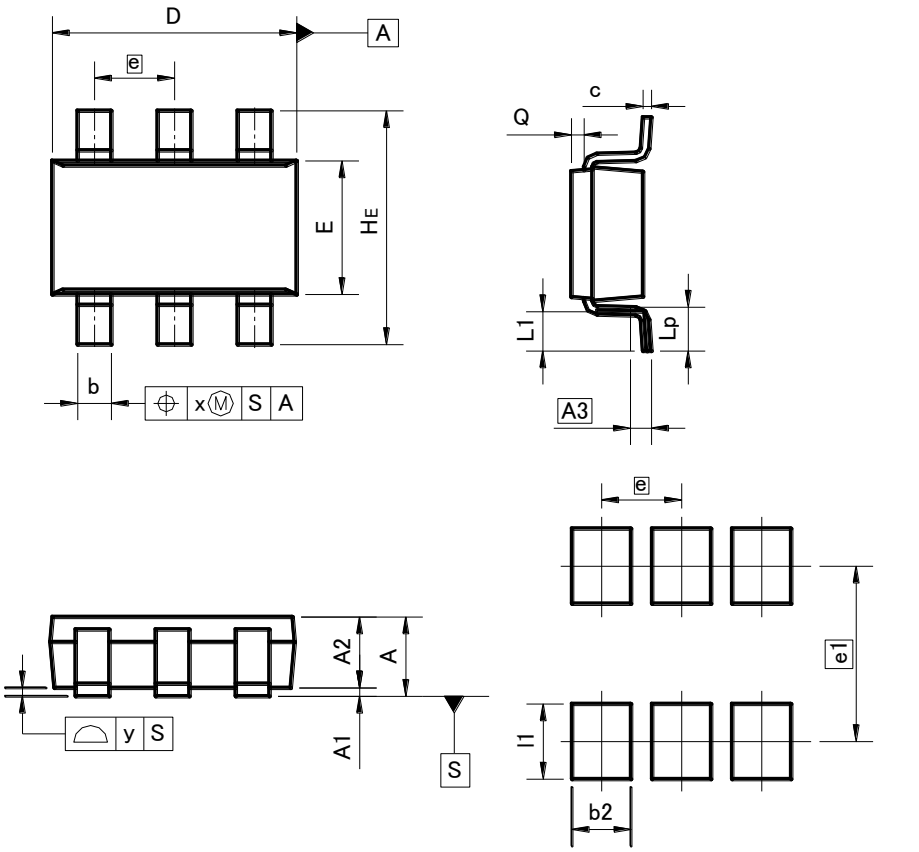


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●**Dimensions** (Unit : mm)

TSMT6



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	–	1.00	–	0.039
A1	0.00	0.10	0.000	0.004
A2	0.75	0.95	0.030	0.037
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.10	0.26	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.05	0.25	0.002	0.010
x	–	0.20	–	0.008
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2		0.70	–	0.028
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm / inches

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