QSX2

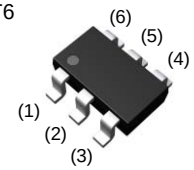
NPN 5.0A 30V Middle Power Transistor

Datasheet

Parameter	Value
V_{CEO}	30V
I_C	5.0A

●Outline

TSMT6

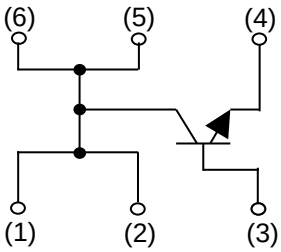


QSX2
(SC-95)

●Features

1) Suitable for Middle Power Driver
2) Complementary NPN Types : QST3
3) Low $V_{CE(sat)}$
   $V_{CE(sat)}$= 0.25V(Max.)
   (I_C/I_B= 2A / 40mA)
4) Lead Free/RoHS Compliant.

●Inner circuit



(1) Collector
(2) Collector
(3) Base
(4) Emitter
(5) Collector
(6) Collector

●Applications

Motor driver , LED driver
Power supply

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
QSX2	TSMT6	2928	TR	180	8	3,000	X02

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	30	V
Collector-emitter voltage		V_{CEO}	30	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	5.0	A
	Pulsed	I_{CP} *1	8.0	A
Power dissipation		P_D *2	500	mW
		P_D *3	1.25	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	□55 to □150	°C

*1 Pw=1ms , single pulse
*2 Each terminal mounted on a reference land
*3 Mounted on a ceramic board (25×25×0.8 mm)

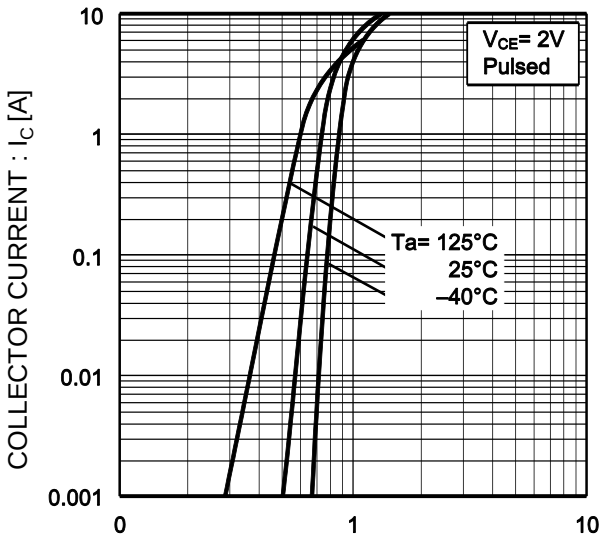
●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	30	-	-	V
Collector-base breakdown voltage	BV_{CBO}	I_C = 10□A	30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 10□A	6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 30V	-	-	100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 6V	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 2A, I_B = 40mA	-	110	250	mV
DC current gain	h_{FE} *4	V_{CE} = 2V, I_C = 500mA	270	-	680	-
Transition frequency	f_T *4	V_{CE} = 2V, I_E = □500mA f=100MHz	-	200	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 1MHz	-	60	-	pF

*4 Pulsed

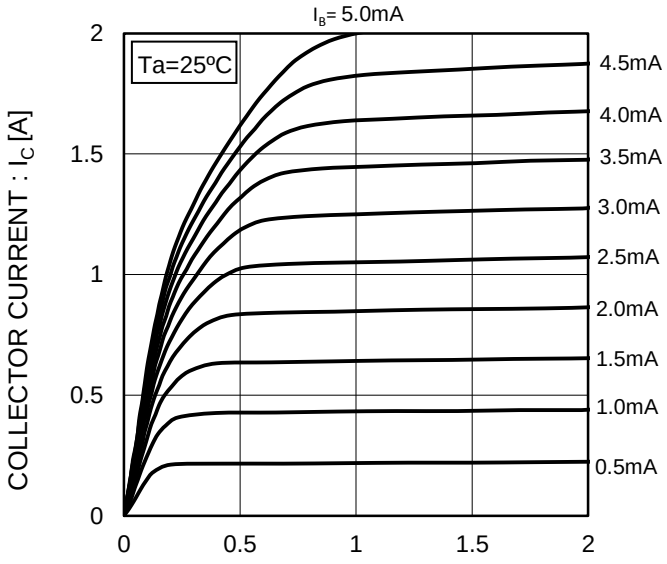
●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics



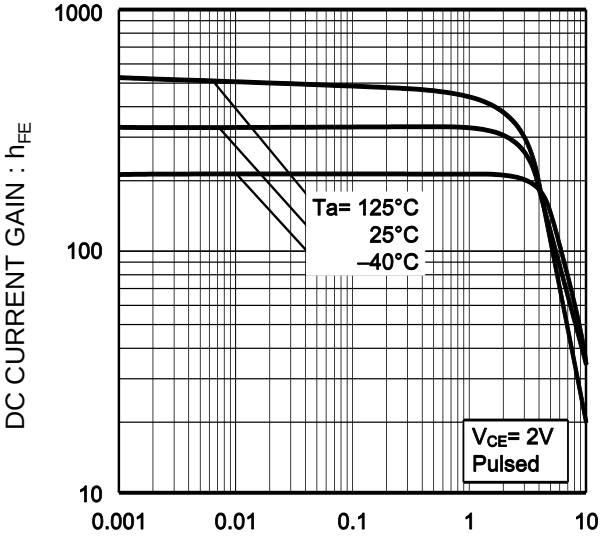
BASE TO EMITTER VOLTAGE : V_{BE} [V]

Fig.2 Typical Output Characteristics



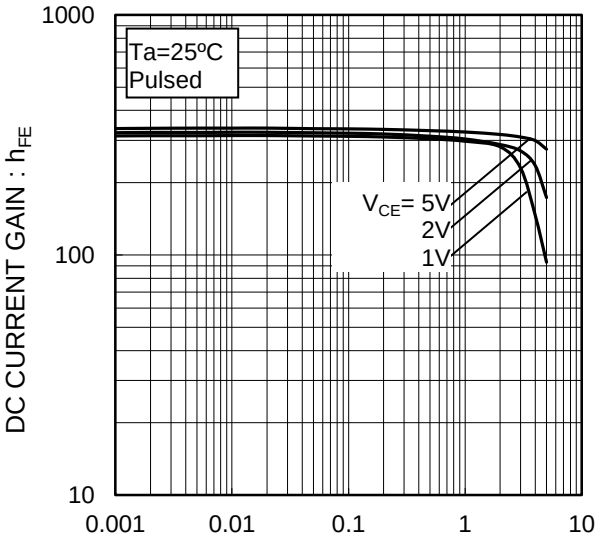
COLECTOR TO EMITTE VOLTAGE : V_{CE} [V]

Fig.3 DC Current Gain vs. Collector Current(I)



COLLECTOR CURRENT : I_C [mA]

Fig.4 DC Current Gain vs. Collector Current(II)



COLLECTOR CURRENT : I_C [A]

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

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

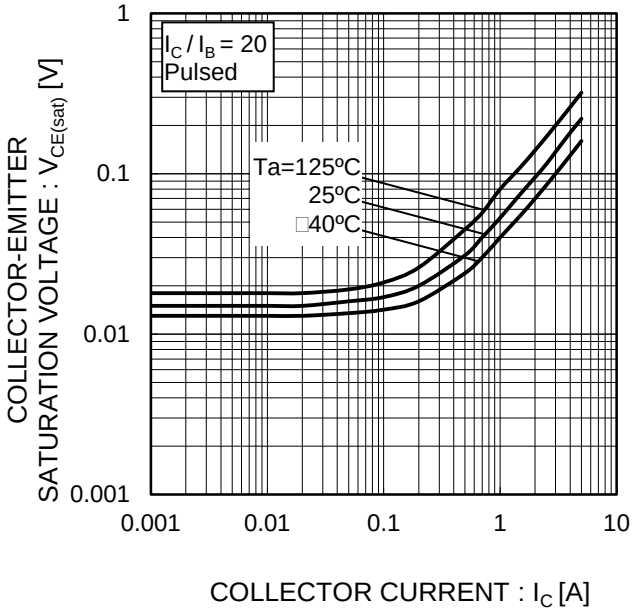


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

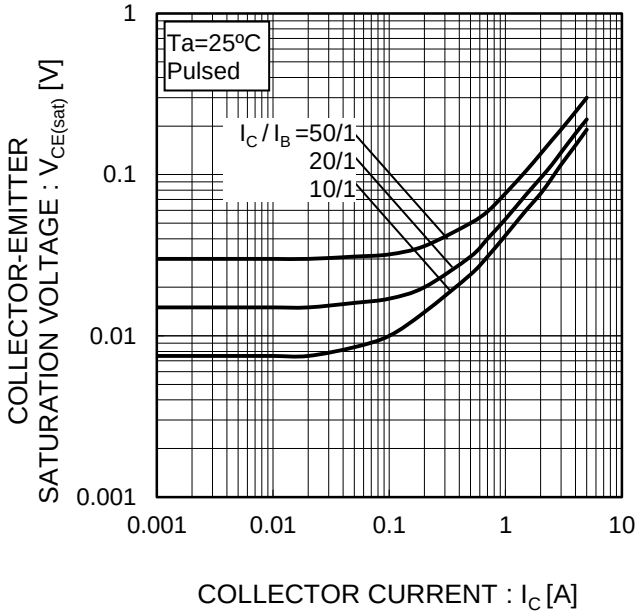


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

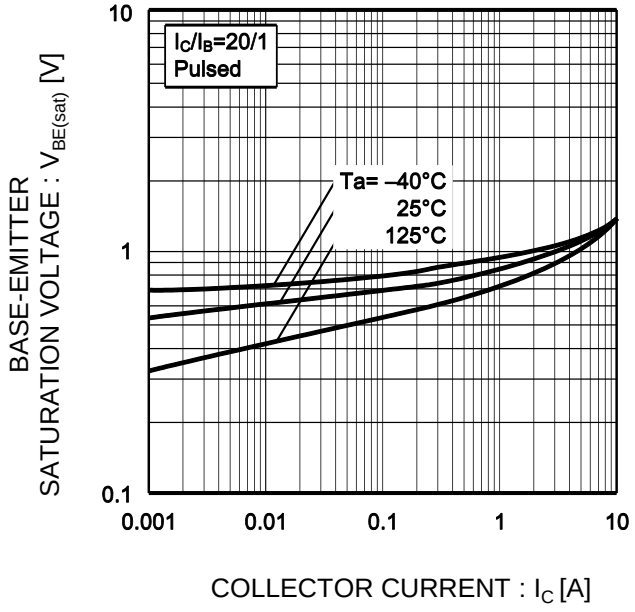
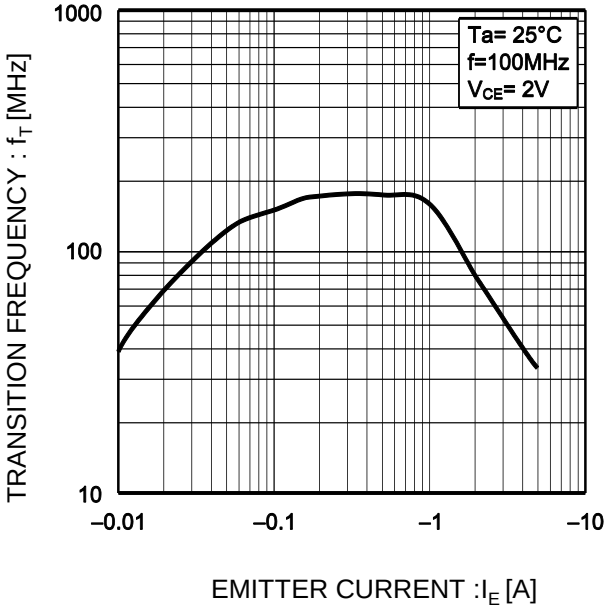


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

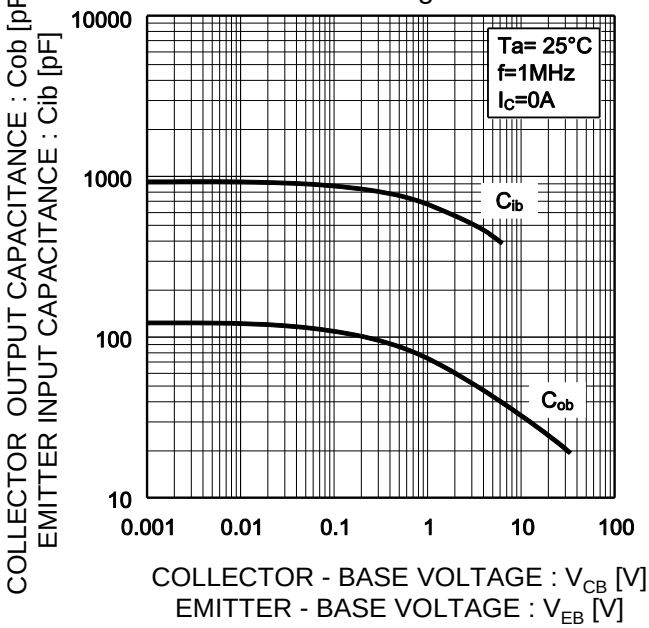
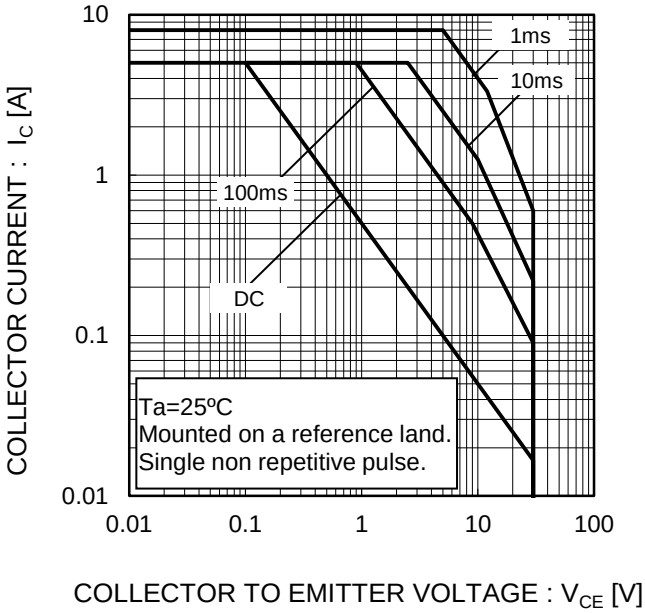
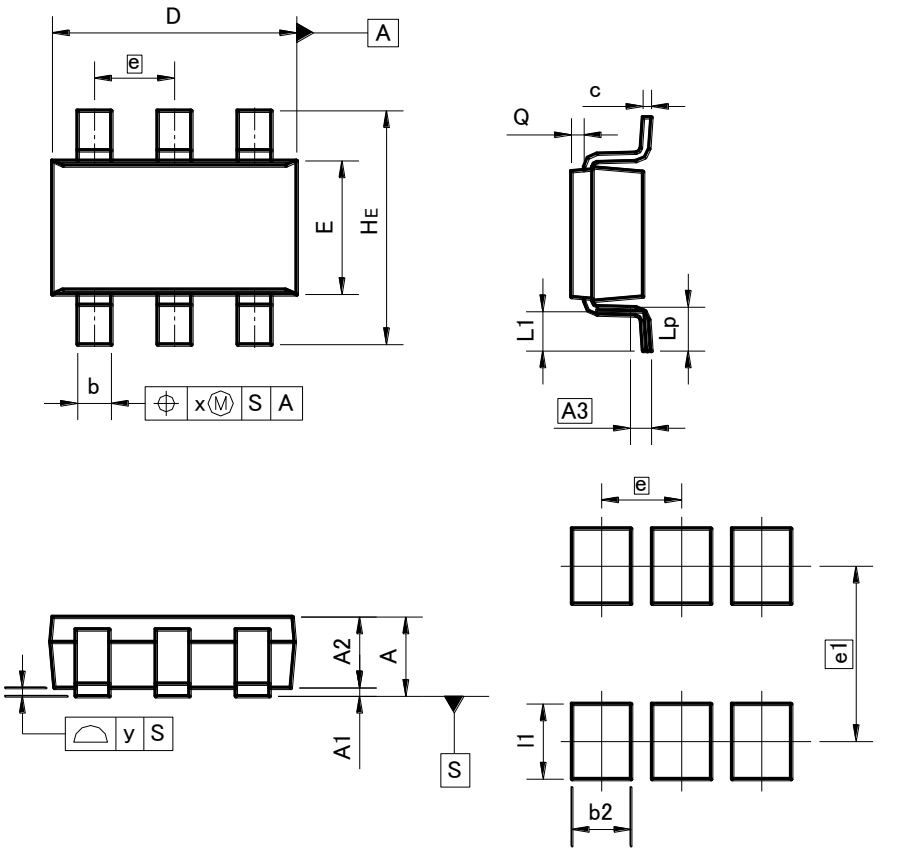


Fig.10 Safe Operating Area



●**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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