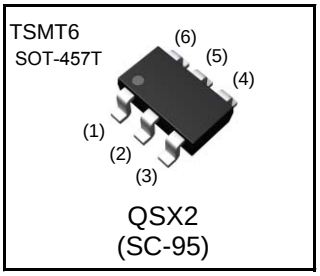
QSX2

NPN 5.0A 30V Middle Power Transistor

Datasheet

Parameter	Value
V_{CEO}	30V
I_C	5.0A

●Outline

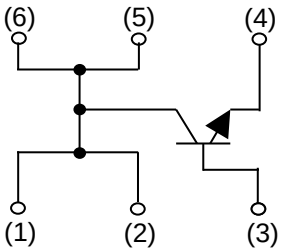


QSX2
(SC-95)

●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

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●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

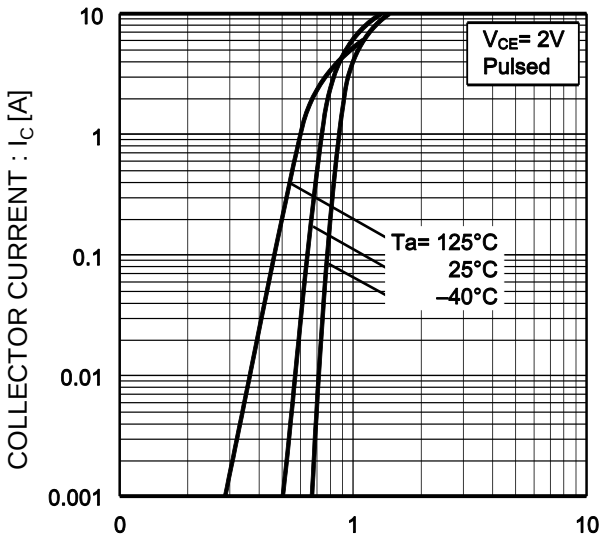
*4 Pulsed

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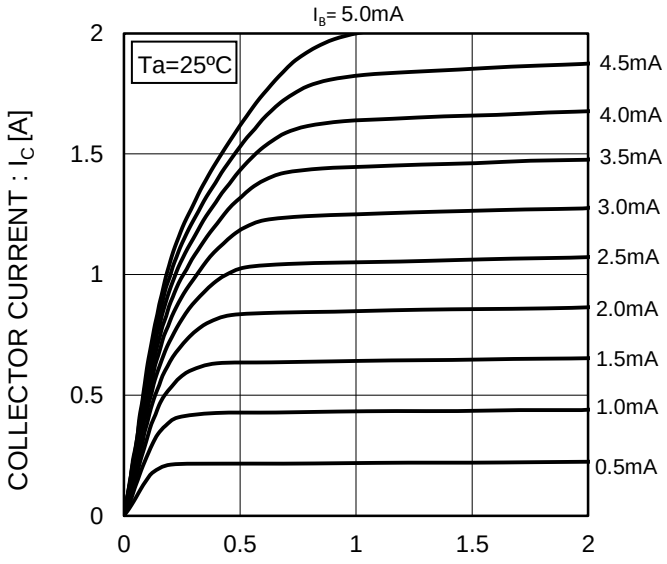
●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics



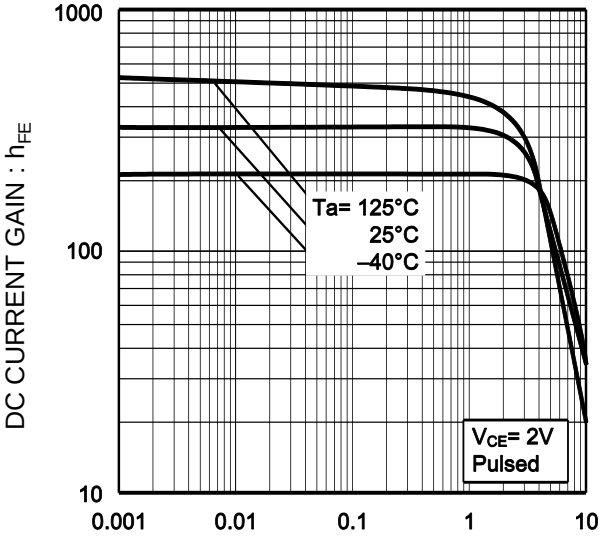
BASE TO EMITTER VOLTAGE : V_{BE} [V]

Fig.2 Typical Output Characteristics



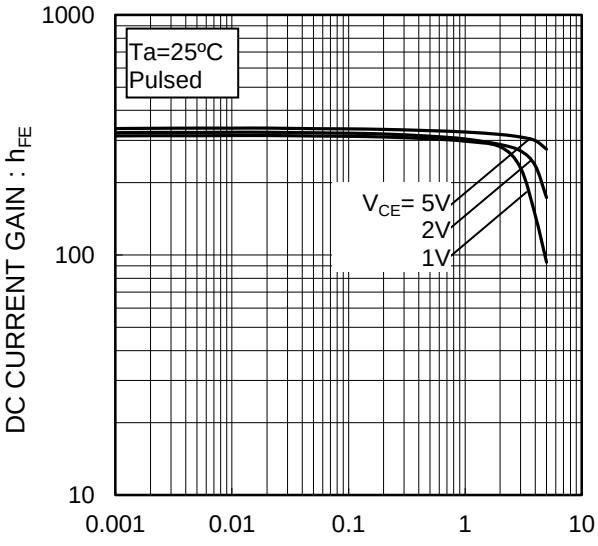
COLECTOR TO EMITTE VOLTAGE : V_{CE} [V]

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]

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

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

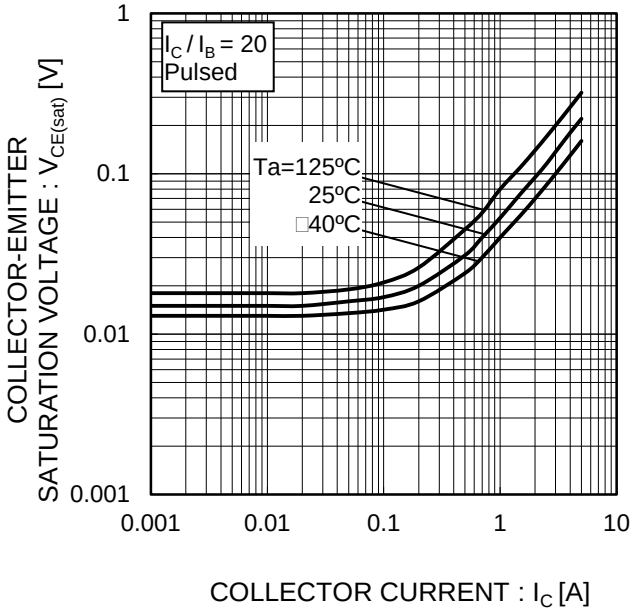


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

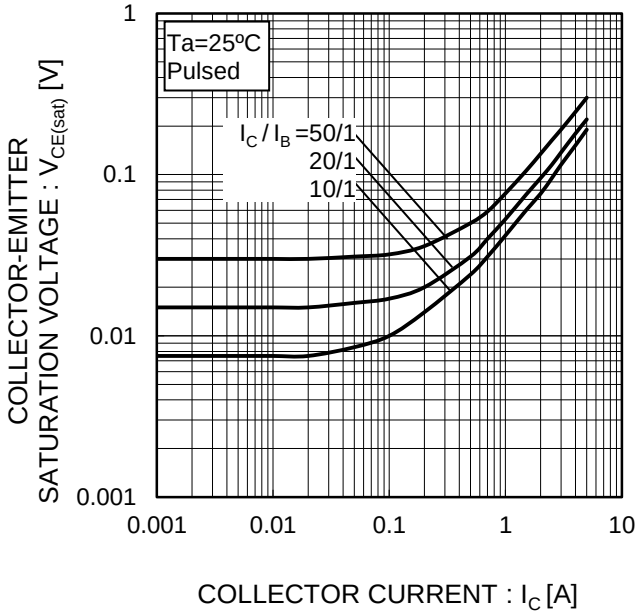


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

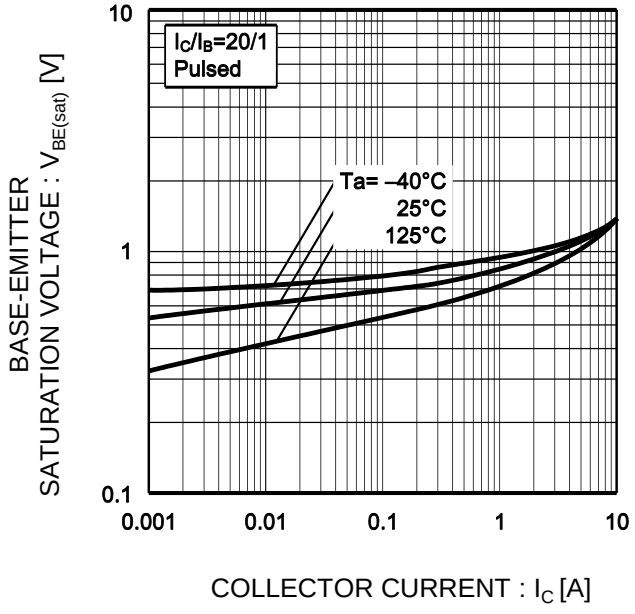
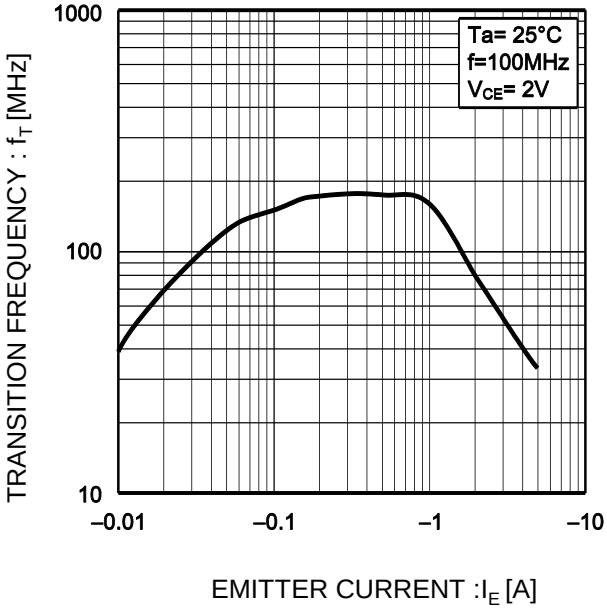


Fig.8 Gain Bandwidth Product vs. Emitter Current



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●Electrical characteristic curves(Ta = 25°C)

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

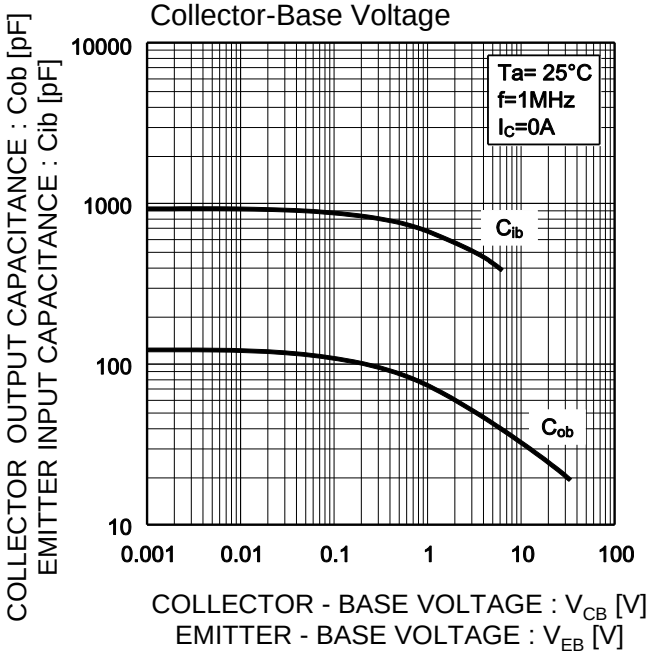
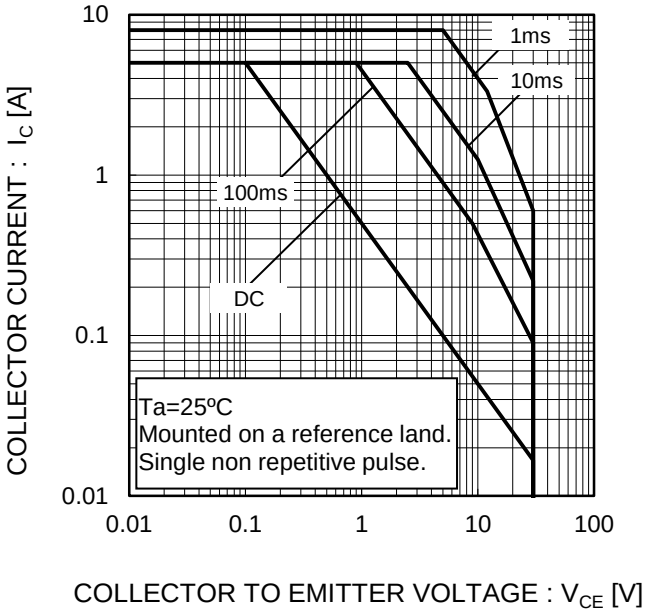


Fig.10 Safe Operating Area

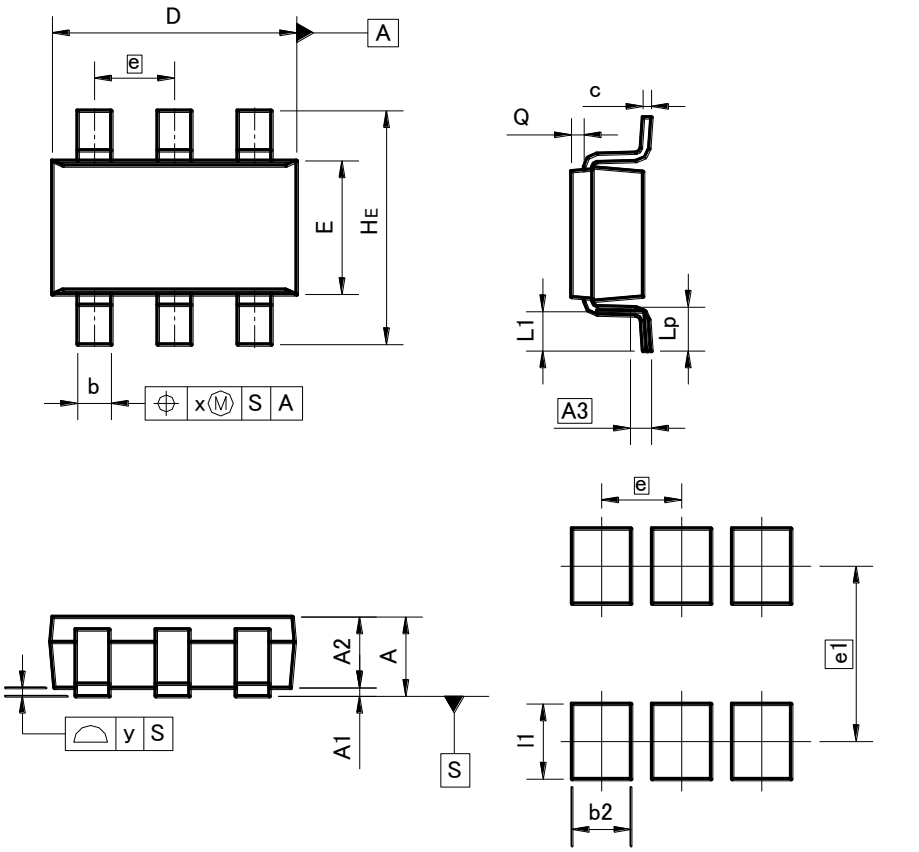


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●**Dimensions** (Unit : mm)

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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4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

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