General purpose transistor (isolated transistor and diode)

QSL12

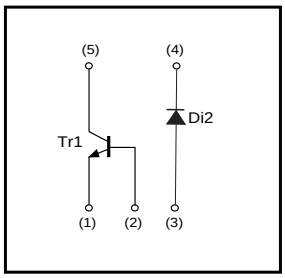
A 2SD2675 and a RB461F are housed independently in a TSMT5 package.

●Applications
DC / DC converter
Motor driver

●Features
1) Tr : Low V_{CE}(sat)
   Di : Low V_F
2) Small package

●Structure
Silicon epitaxial planar transistor
Schottky barrier diode

●Equivalent circuit

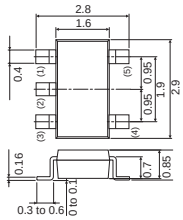


●Packaging specifications

Type	QSL12
Package	TSMT5
Marking	L12
Code	TR
Basic ordering unit(pieces)	3000

●External dimensions (Unit : mm)

QSL12



ROHM : TSMT5 Each lead has same dimensions

Abbreviated symbol : L12

●Absolute maximum ratings (Ta=25°C)

Tr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	1	A
	I_{CP}	2	A ∗1
Power dissipation	Pc	0.9	W / ELEMENT ∗2
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	–40 to +125	°C

∗1 Single pulse, Pw=1ms
∗2 Mounted on a 25mm×25mm×t0.8mm ceramic substrate

Di2

Parameter	Symbol	Limits	Unit
Peak reverse voltage	V_{RM}	25	V
Reverse voltage (DC)	V_R	20	V
Average rectified forward current	I_F	700	mA
Forward current surge peak (60Hz, 1∞)	I_{FSM}	3	A
Power dissipation	P_D	0.7	W / ELEMENT ∗
Junction temperature	Tj	125	°C
Range of storage temperature	Tstg	–40 to +125	°C

∗ Mounted on a 25mm×25mm×t0.8mm ceramic substrate

Tr1&Di2

Parameter	Symbol	Limits	Unit
Total power disipation	P_D	0.5	W / TOTAL ∗1
		1.25	W / TOTAL ∗2

∗1 Each terminal mounted on a recommended land.
∗2 Mounted on a 25mm×25mm×t0.8mm ceramic substrate.

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	–	–	V	I_C=10μA
Collector-emitter breakdown voltage	BV_{CEO}	30	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	6	–	–	V	I_E=10μA
Collector cutoff current	I_{CBO}	–	–	100	nA	V_{CB}=30V
Emitter cutoff current	I_{EBO}	–	–	100	nA	V_{EB}=6V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	120	350	mV	I_C/I_B=500mA/25mA
DC current gain	h_{FE}	270	–	680	–	V_{CE}/I_C=2V/100mA ∗
Transition frequency	f_T	–	320	–	MHz	V_{CE}=2V, I_E=–100mA, f=100MHz ∗
Collector output capacitance	Cob	–	7	–	pF	V_{CB}=10V, I_E=0A, f=1MHz

∗ Pulsed

Di2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_F	–	450	490	mV	I_F=700mA
Reverse current	I_R	–	–	200	μA	V_R=20V
Reverse recovery fime	t_{rr}	–	9	–	ns	I_F=I_R=100mA, I_{rr}=0.1I_R

●Electrical characteristic curves

Tr1

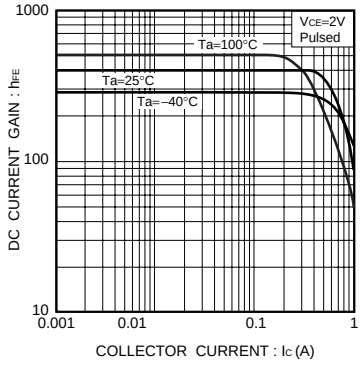


Fig.1 DC current gain vs. collector current

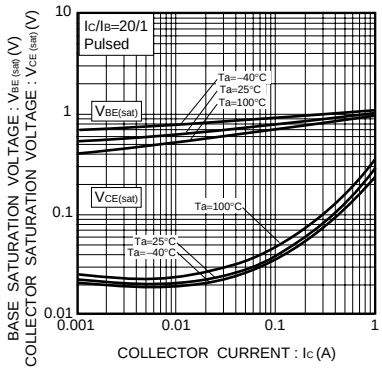


Fig.2 Collector-emitter saturation voltage base-emitter saturation voltage vs. collector current

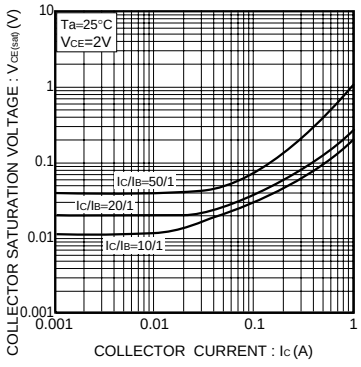


Fig.3 Collector-emitter saturation voltage vs. collector current

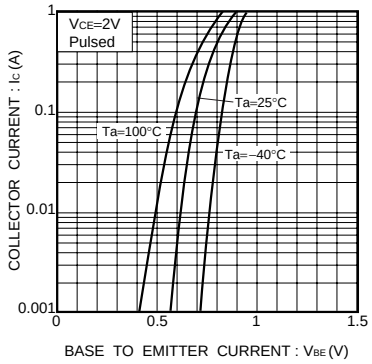


Fig.4 Grounded emitter propagation characteristics

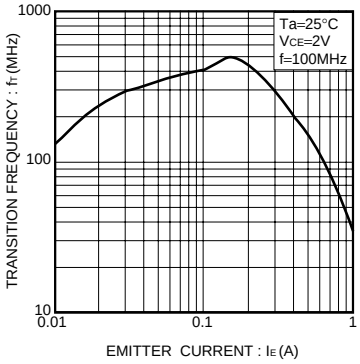


Fig.5 Gain bandwidth product vs. emitter current

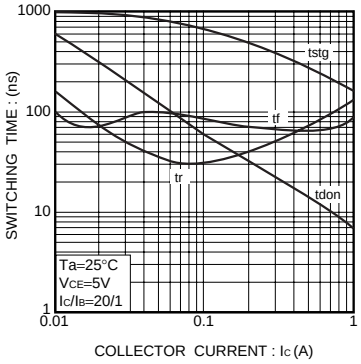


Fig.6 Switching time

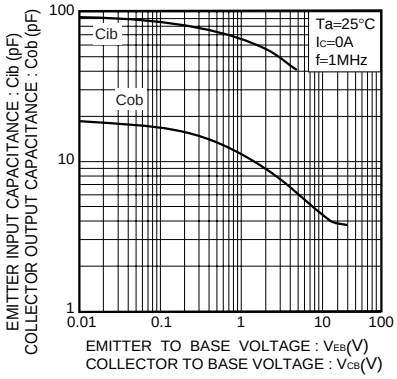


Fig.7 Collector output capacitance vs. collector-base voltage Emitter input capacitance vs. emitter-base voltage

Di2

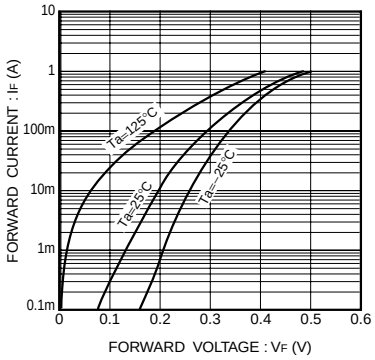


Fig.8 Forward characteristics

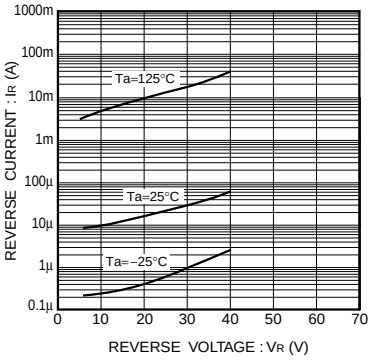


Fig.9 Reverse characteristics

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