

General purpose transistor (isolated transistor and diode)

FML10

2SD2652 and a RB461F are housed independently in a UMT package.

●Applications

DC / DC converter
Motor driver

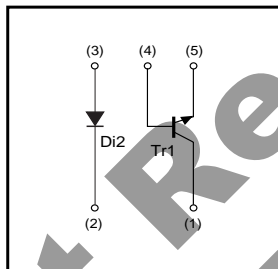
●Features

- 1) Tr1: Low $V_{CE(sat)}$
Di : Low V_f
- 2) Small package

●Structure

Silicon epitaxial planar transistor
Schottky barrier diode

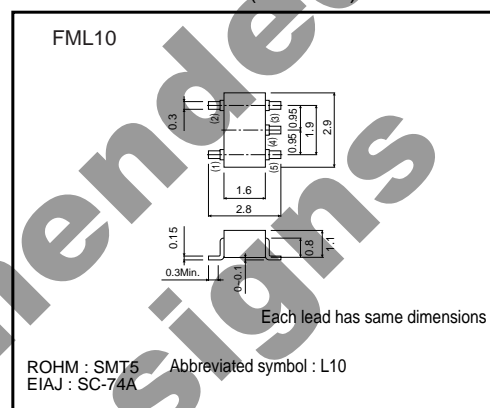
●Equivalent circuit



●Packaging specifications

Type	FML10
Package	SMT5
Marking	L10
Code	TR
Basic ordering unit(pieces)	3000

●External dimensions (Unit : mm)



Transistors

●Absolute maximum ratings (Ta=25°C)

Tr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CBO}	15	V
Collector-emitter voltage	V _{CEO}	12	V
Emitter-base voltage	V _{EBO}	6	V
Collector current	I _C	1.5	A
	I _{CP}	3	A *
Power dissipation	P _C	200	mW
Junction temperature	T _J	150	°C
Range of storage temperature	T _{stg}	-40 to +125	°C

*Single pulse, P_w=1ms

Di2

Parameter	Symbol	Limits	Unit
Peak reverse voltage	V _{RM}	25	V
Average rectified forward current	I _F	700	mA
Forward current surge peak (60Hz, 1∞)	I _{FSM}	3	A
Reverse voltage (DC)	V _R	20	V
Junction temperature	T _J	125	°C
Range of storage temperature	T _{stg}	-40 to +125	°C

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	15	-	-	V	I _C =10μA
Collector-emitter breakdown voltage	BV _{CEO}	12	-	-	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	6	-	-	V	I _E =10μA
Collector cutoff current	I _{CBO}	-	-	100	nA	V _{CB} =15V
Emitter cutoff current	I _{EBO}	-	-	100	nA	V _{EB} =6V
Collector-emitter saturation voltage	V _{CE(sat)}	-	85	200	mV	I _C /I _B =500mA/25mA
DC current gain	h _{FE}	270	-	680	-	V _{CE} /I _C =2V/200mA *
Transition frequency	f _r	-	400	-	MHz	V _{CE} =2V, I _E =-200mA, f=100MHz *
Collector output capacitance	C _{ob}	-	12	-	pF	V _{CB} =10V, I _E =0A, f=1MHz

*Pulsed

Di2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _F	-	-	490	mV	I _F =700mA
Reverse current	I _R	-	-	200	μA	V _R =20V

Transistors

●Electrical characteristic curves

Tr1

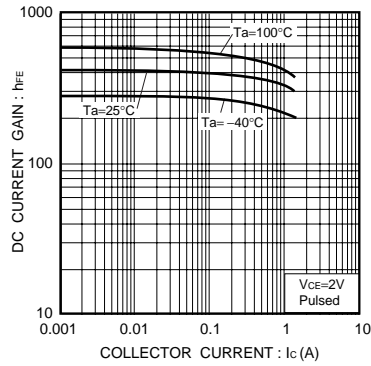


Fig.1 DC current gain vs. collector current

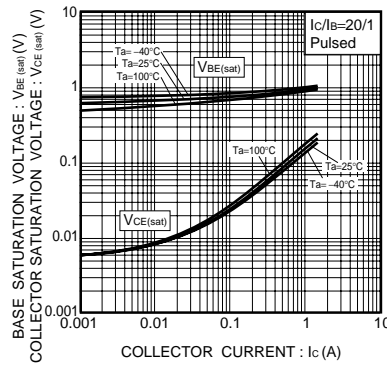


Fig.2 Collector-emitter saturation voltage base-emitter saturation voltage vs. collector current

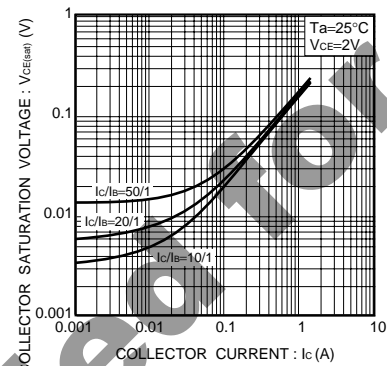


Fig.3 Collector-emitter saturation voltage vs. collector current

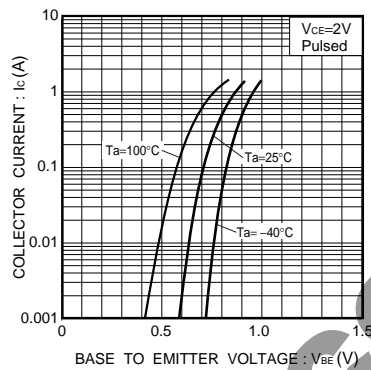


Fig.4 Grounded emitter propagation characteristics

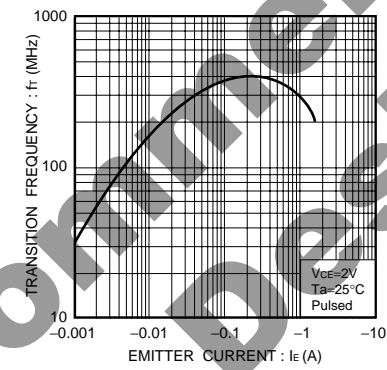


Fig.5 Gain bandwidth product vs. emitter current

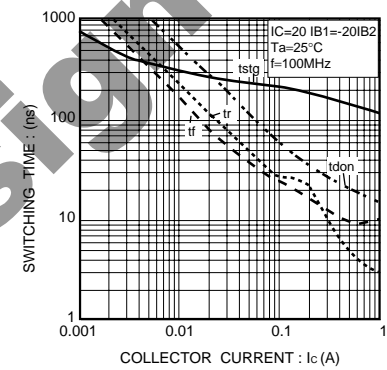


Fig.6 Switching time

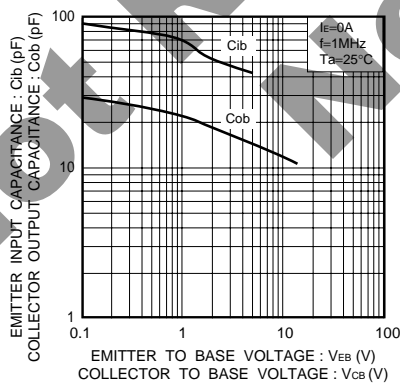


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Transistors

Di2

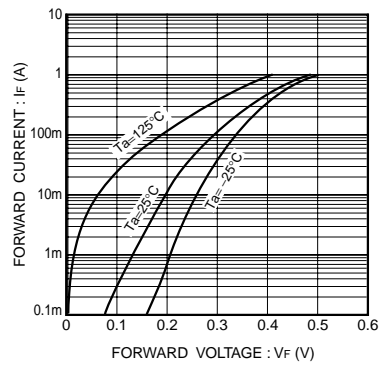


Fig.9 Forward characteristics

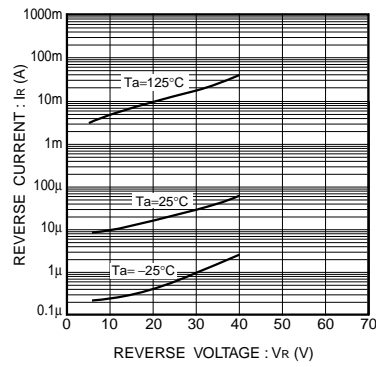


Fig.10 Reverse characteristics

Not Recommended for New Designs

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