Low-frequency transistor

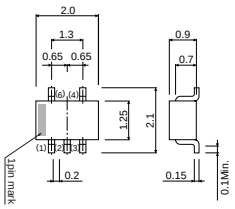
UML1N

●Features

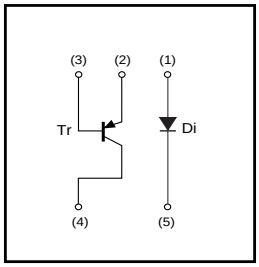
1) The 2SA1037AK and a diode are housed independently in a UMT package.

●External dimensions (Unit : mm)

UMT5



●Equivalent circuit



●Packaging specifications

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

●Absolute maximum ratings (Ta=25°C)

Tr

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−60	V
Collector-emitter voltage	V_{CEO}	−50	V
Emitter-base voltage	V_{EBO}	−6	V
Collector current	I_C	−0.15	A
Collector power dissipatio	Pc	0.15	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

Di

Parameter	Symbol	Limits	Unit
DC reverse voltage	V_R	80	V
Peak reverse voltage	V_{RM}	80	V
Mean rectifying current	I_O	0.1	A
Peak forward voltage	I_{FM}	0.3	A
Surge current	Isurge	4	A
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C
Specified I/O frequencies	f	100	MHz

●Electrical characteristics (Ta=25°C)

Tr

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	−50	–	–	V	I_C= −1mA
Collector-base breakdown voltage	BV_{CBO}	−60	–	–	V	I_C= −50μA
Emitter-base breakdown voltage	BV_{EBO}	−6	–	–	V	I_E= −50μA
Collector cutoff current	I_{CBO}	–	–	−0.1	μA	V_{CB}= −60V
Emitter cutoff current	I_{EBO}	–	–	−0.1	μA	V_{EB}= −5V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	−0.5	V	I_C/I_B= −50mA/ −5mA
DC current transfer ratio	h_{FE}	120	–	560	–	V_{CE}= −6V, I_C= −1mA
Transition frequency	f_T	–	140	–	MHz	V_{CE}= −12V, I_E= 2mA, f= 100MHz
Output capacitance	Cob	–	4	5	pF	V_{CB}= −12V, I_E= 0A, f= 1MHz

Di

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_F	–	–	1.2	V	I_F=100mA
Reverse current	I_R	–	–	0.1	μA	V_R=70V
Capacitance between terminals	C_T	–	–	3.5	pF	V_R=6V, f=1MHz
Reverse recovery time	trr	–	–	4	ns	V_R=6V, I_F=5mA, RL=50Ω

●Electrical characteristic curves

Tr

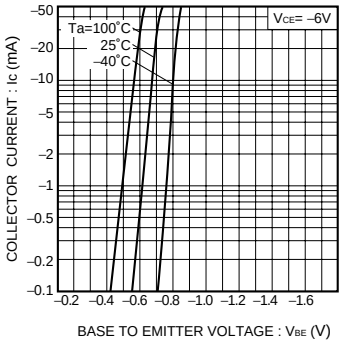


Fig.1 Grounded emitter propagation characteristics

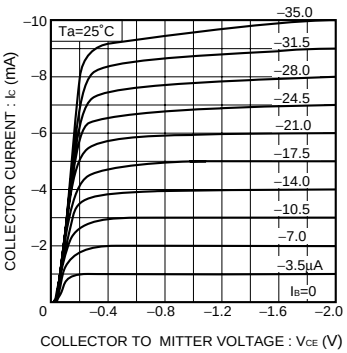


Fig.2 Grounded emitter output characteristics (I)

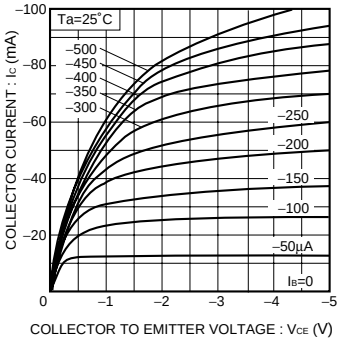


Fig.3 Grounded emitter output characteristics (II)

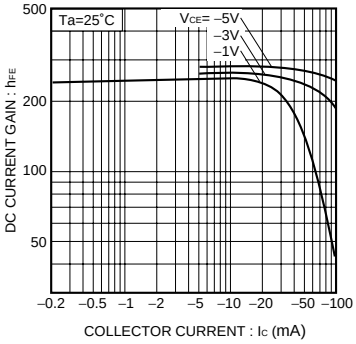


Fig.4 DC current gain vs. collector current (I)

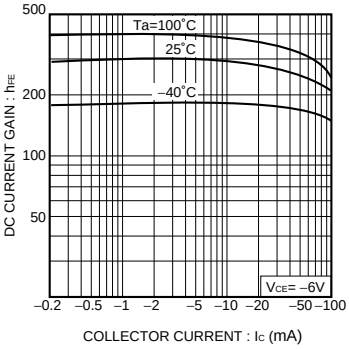


Fig.5 DC current gain vs. collector current (II)

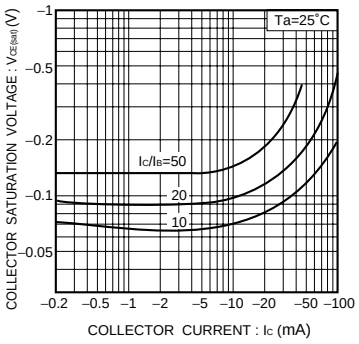


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

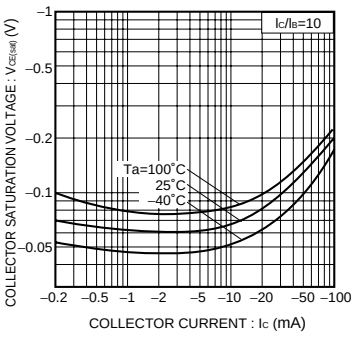


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

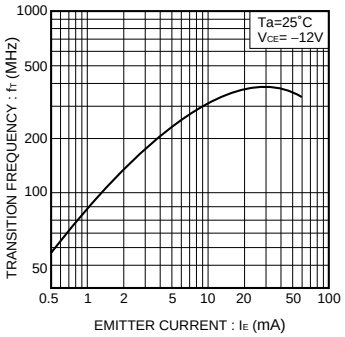


Fig.8 Gain bandwidth product vs. emitter current

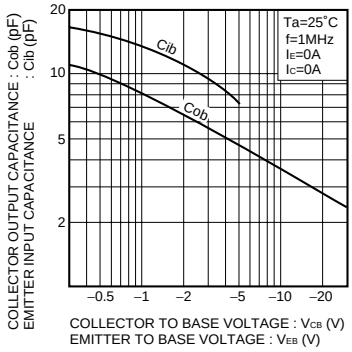


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter inputcapacitance vs. emitter-base voltage

Di

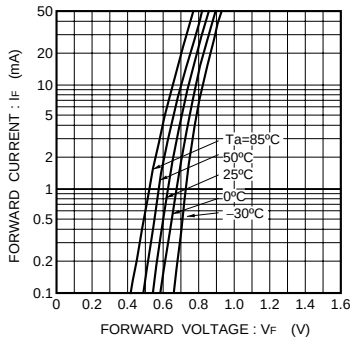


Fig.10 Forward characteristics

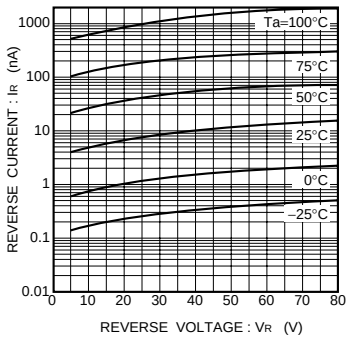


Fig.11 Reverse characteristics

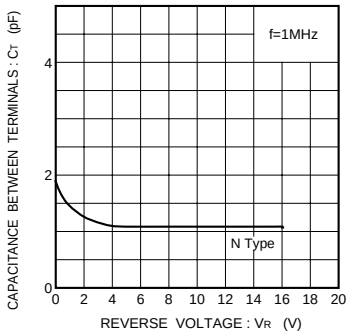


Fig.12 Capacitance between terminals characteristics

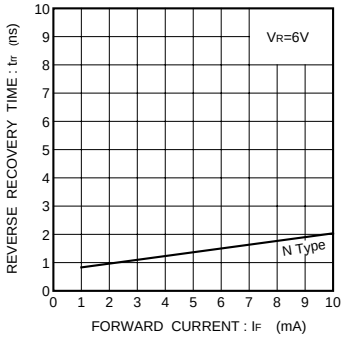


Fig.13 Reverse recovery time

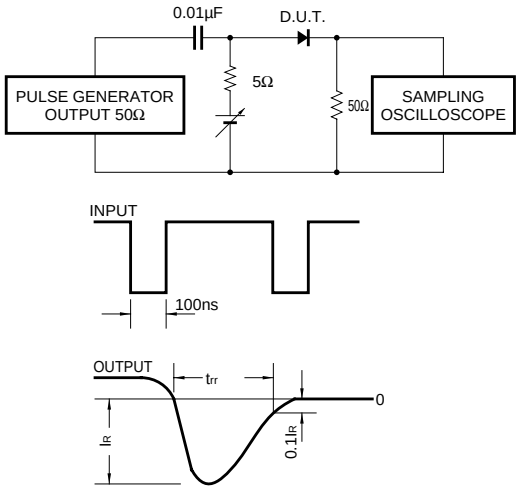


Fig.14 Reverse recovery time (t_{rr}) measurement circuit

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