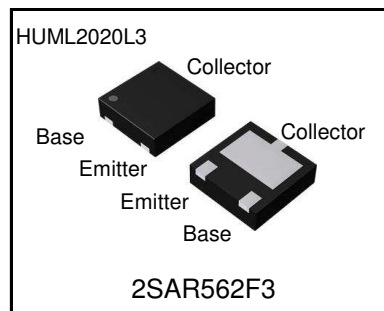


Parameter	Value
V_{CEO}	-30V
I_C	-6A

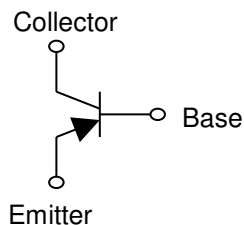
●Features

- 1) Suitable for Middle Power Driver
- 2) Low $V_{CE(sat)}$
 $V_{CE(sat)} = -300\text{mV(Max.)}$ ($I_C/I_B = -3A/-60\text{mA}$)
- 3) High collector current
 $I_C = -6A$ (max), $I_{CP} = -7A$ (max)
- 4) Leadless small SMD package "HUML2020L3"
 Excellent thermal and electrical conductivity
- 5) Lead Free/RoHS Compliant.

●Outline



●Inner circuit



●Applications

Load switch, Battery-driven devices, Power management
 Charging circuits, Power switches (e.g. motors, fans)

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SAR562F3	HUML2020L3	2020	TR	180	8	3,000	MT

●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	-6.0	A
	Pulsed	I_{CP}^{*1}	-7.0	A
Base Current		I_B	-0.6	A
Power dissipation		P_D^{*2}	1.0	W
		P_D^{*3}	2.1	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	-55 to +150	°C

*1 Pw=1ms , single pulse

*2 Mounted on an FR4 board (25.4×25.4×1.6mm , 645mm² Cu PAD)

*3 Pw=10s , Mounted on an FR4 board (25.4×25.4×1.6mm , 645mm² Cu PAD)

●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}	$I_C = -100\mu A$	-30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -100\mu A$	-6	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -20V$	-	-	-0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4V$	-	-	-0.5	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -3A, I_B = -60mA$	-	-160	-300	mV
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -3A, I_B = -60mA$	-	-0.9	-1.2	V
DC current gain	h_{FE}	$V_{CE} = -2V, I_C = -500mA$	200	-	500	-
Transition frequency	f_T	$V_{CE} = -10V, I_E = 200mA$ $f = 100MHz$	-	180	-	MHz
Output capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0A$ $f = 1MHz$	-	75	-	pF

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

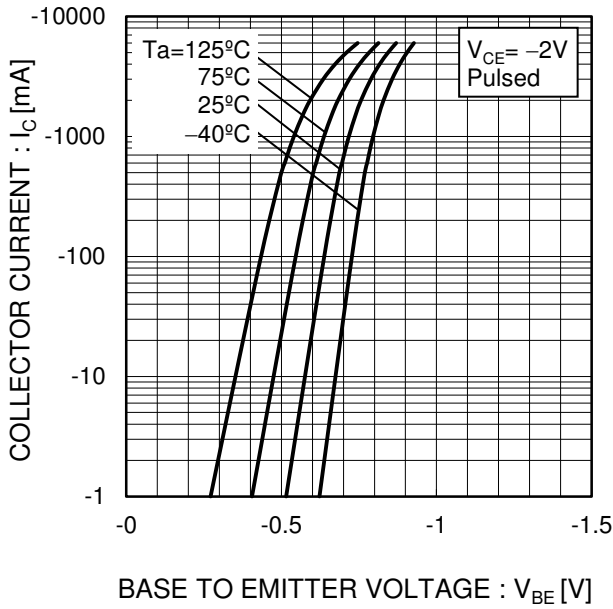


Fig.2 Typical Output Characteristics

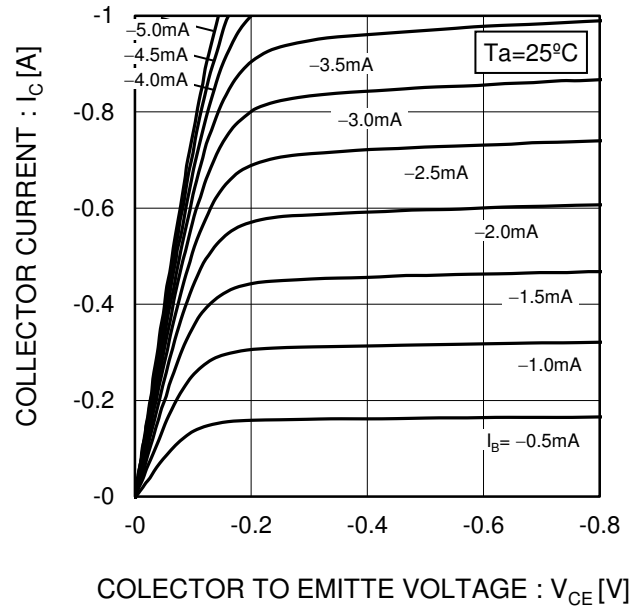


Fig.3 DC Current Gain vs. Collector Current(I)

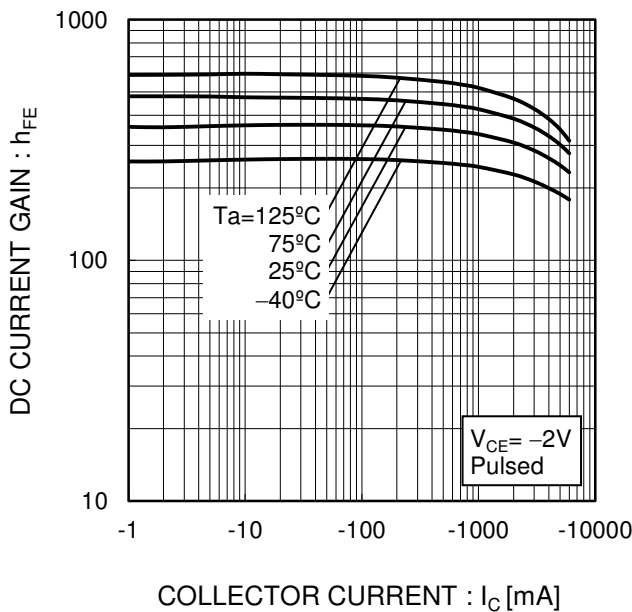
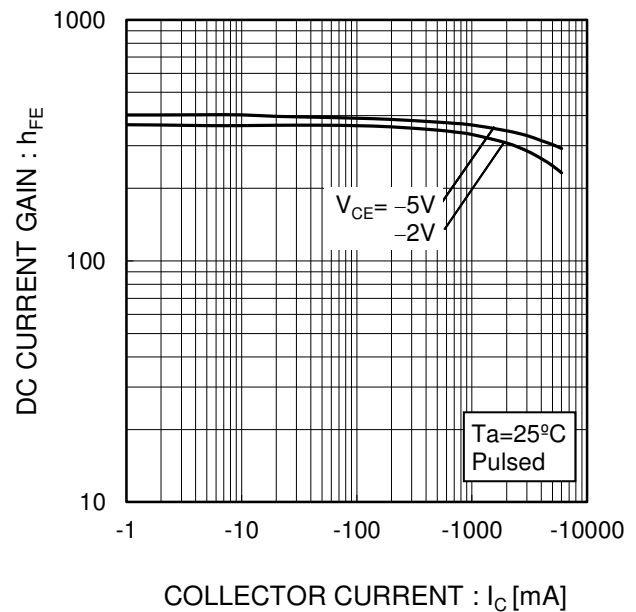


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

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

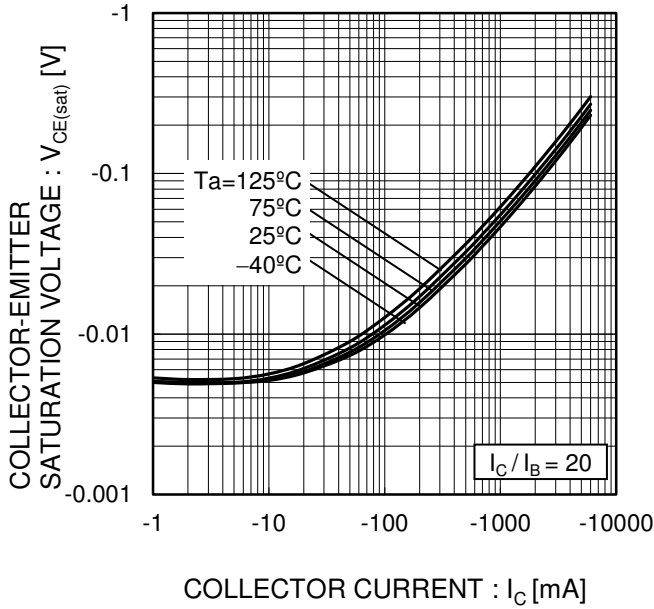


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

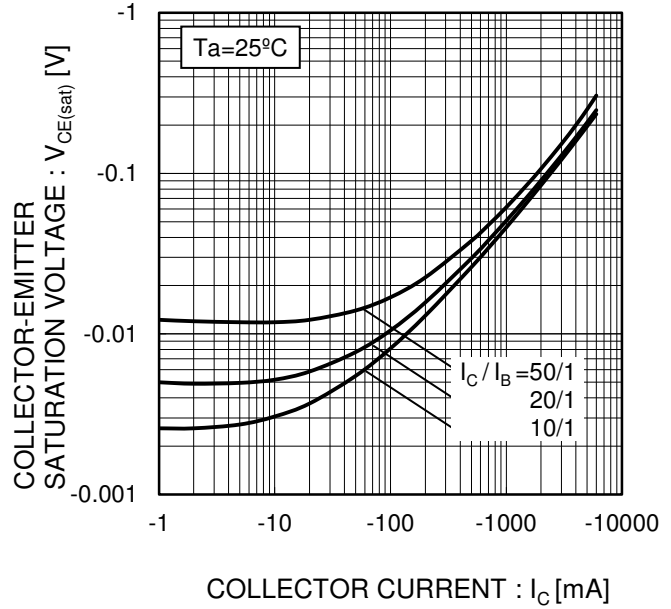


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

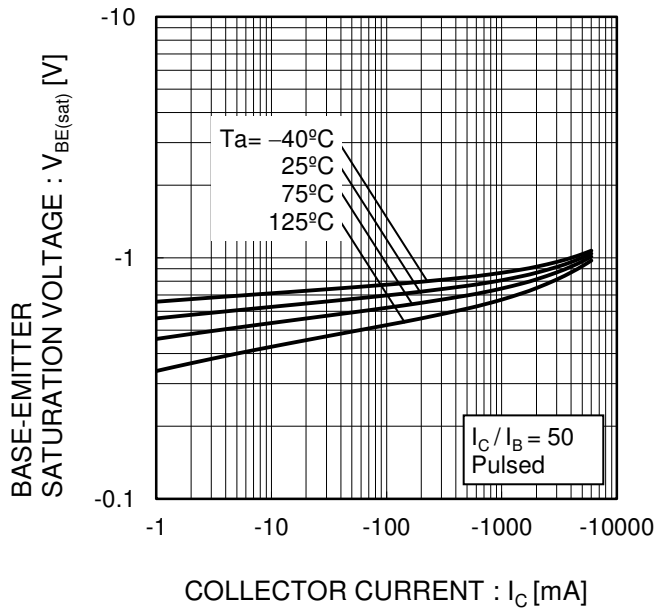
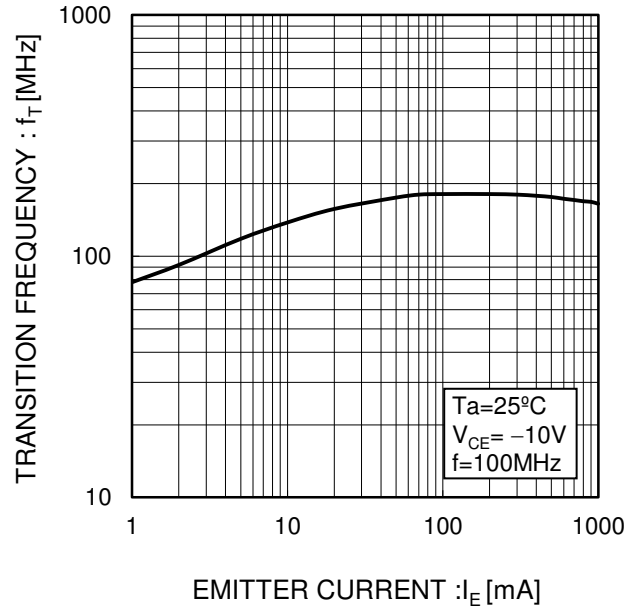


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

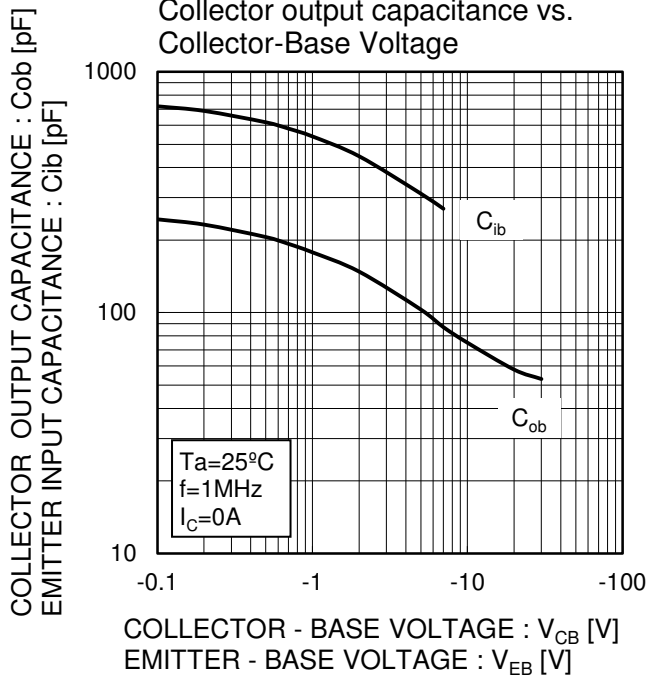
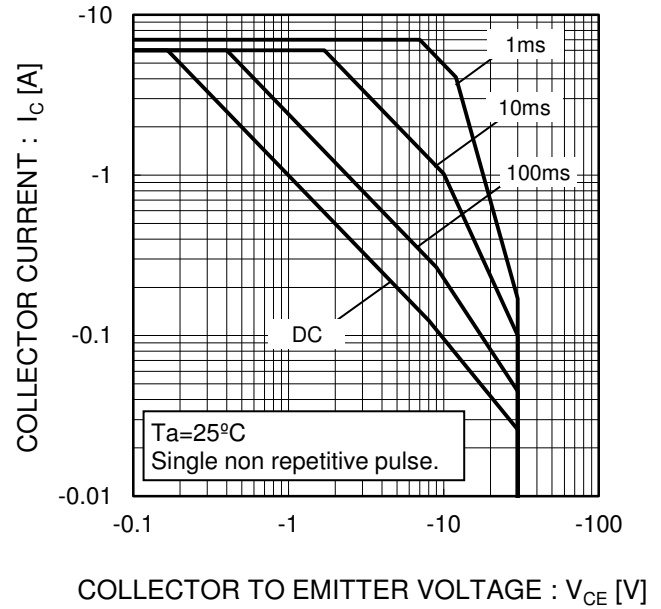
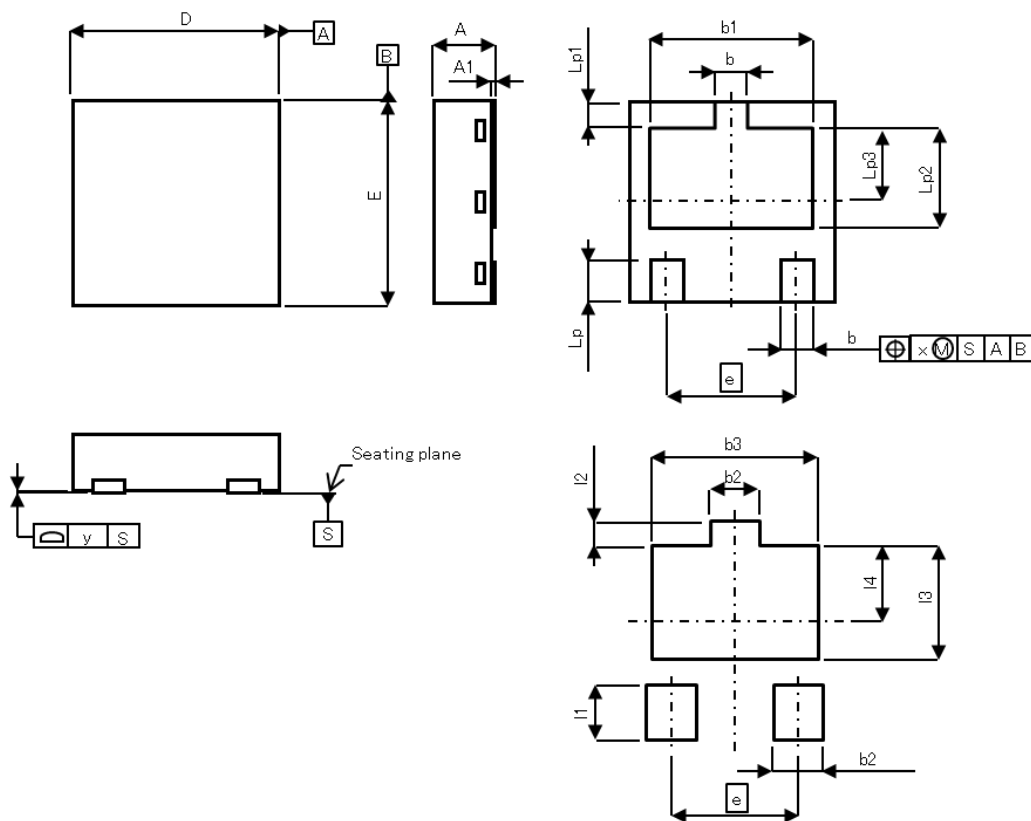


Fig.10 Safe Operating Area



●Dimensions (Unit : mm)

HUML2020L3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.55	0.65	0.022	0.026
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
b1	1.40	1.60	0.055	0.063
D	1.90	2.10	0.075	0.083
E	1.90	2.10	0.075	0.083
e	1.30		0.051	
Lp	0.35	0.45	0.014	0.018
Lp1	0.25 REF		0.01 REF	
Lp2	0.90	1.10	0.035	0.043
Lp3	0.70	0.80	0.028	0.031
x	-	0.10	-	0.004
y	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.45	-	0.018
b3	-	1.60	-	0.063
l1	-	0.55	-	0.022
l2	0.25 REF		0.01 REF	
l3	-	1.10	-	0.043
l4	-	0.80	-	0.031

Dimension in mm / inches

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