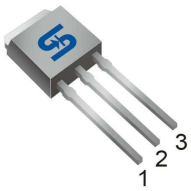
TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSD1858

Low Vcesat NPN Transistor

TO-251 (IPAK)



Pin Definition:
1. Base
2. Collector
3. Emitter

PRODUCT SUMMARY

BV_{CBO}	180V
BV_{CEO}	160V
I_C	1.5A
$V_{CE(SAT)}$	0.3V @ I_C = 1A, I_B = 100mA

Features

- Low $V_{CE(SAT)}$ 0.15 @ I_C = 1A, I_B = 100mA (Typ.)
- High BV_{CEO}

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSD1858CH C5G	TO-251	75pcs / Tube

Note: "G" denote for Halogen Free Product

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	180	V
Collector-Emitter Voltage		V_{CEO}	160	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	1.5	A
	Pulse		3 (note1)	
Power Dissipation @ T_A=25 °C		P_D	1	W
Power Dissipation @ T_C=25 °C		P_D	15	W
Thermal Resistance - Junction to Case		$R\Theta_{JC}$	125	°C/W
Thermal Resistance - Junction to Ambient		$R\Theta_{JA}$	8.33	°C/W
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	°C

Note: 1. Single pulse, Pw≤380us, Duty≤2%

Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	I_C = 1mA, I_E = 0	BV_{CBO}	180	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 10mA, I_B = 0	BV_{CEO}	160	--	--	V
Emitter-Base Breakdown Voltage	I_E = 50uA, I_C = 0	BV_{EBO}	5	--	--	V
Collector Cutoff Current	V_{CB} = 160V, I_E = 0	I_{CBO}	--	--	1	uA
Emitter Cutoff Current	V_{EB} = 4V, I_C = 0	I_{EBO}	--	--	1	uA
Collector-Emitter Saturation Voltage	I_C= 1A, I_B = 100mA	$V_{CE(SAT)}$	--	0.15	0.3	V
Base-Emitter Saturation Voltage	V_{CE} = 5V, I_C = 5mA	$V_{BE(ON)}$	--	--	0.8	V
DC Current Transfer Ratio	V_{CE} = 5V, I_C = 200mA	h_{FE} 1	180	--	390	
	V_{CE} = 5V, I_C = 500mA	h_{FE} 2	30	--	--	
Transition Frequency	V_{CE} =5V, I_E=150mA, f=100MHz	f_T	--	200	--	MHz
Output Capacitance	V_{CB} = 10V, f=1MHz	Cob	--	13	--	pF

Note: Pulse test: pulse width ≤380uS, Duty cycle≤2%

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Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

Figure 1. DC Current Gain
(V_{CE}=5V, T_A=25℃)

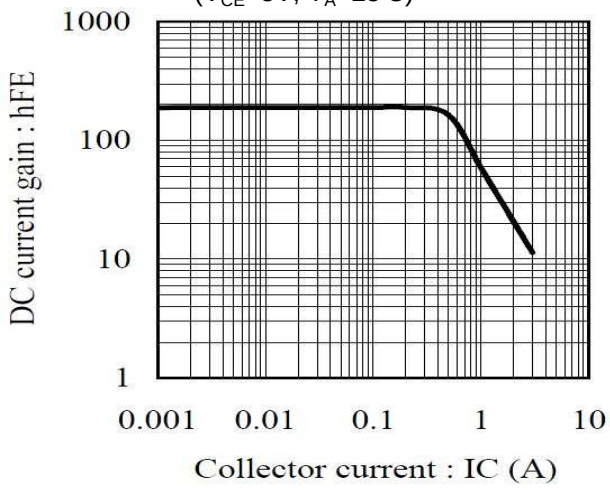


Figure 2. $V_{CE(SAT)}$ vs. Collector Current
(I_C/I_B=10, T_A=25℃)

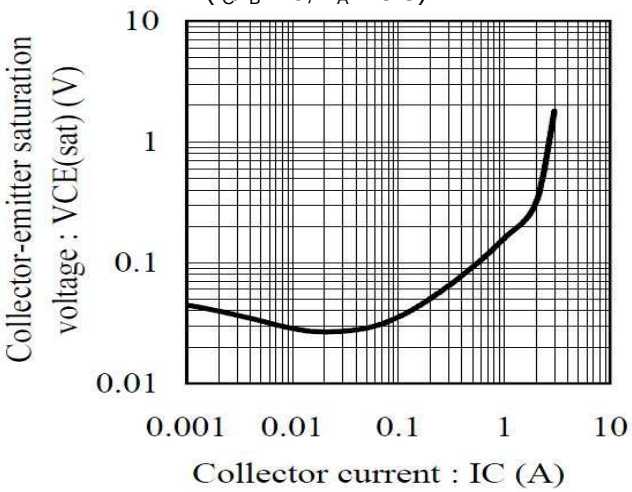


Figure 3. $V_{BE(SAT)}$ vs. Collector Current
(I_C/I_B=10, T_A=25℃)

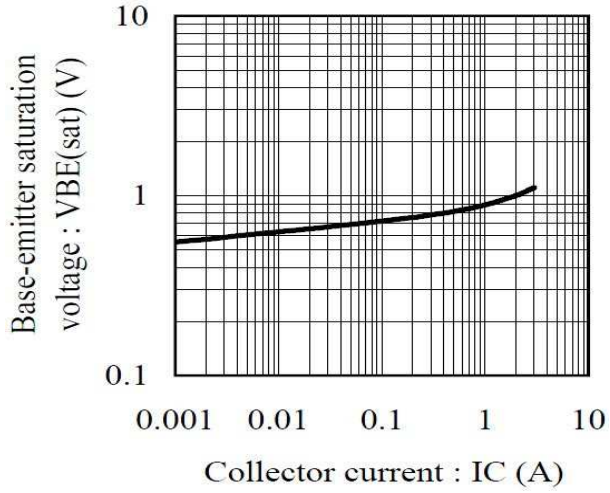


Figure 4. Cib vs. V_{CE}
(f=1MHz, T_A=25℃)

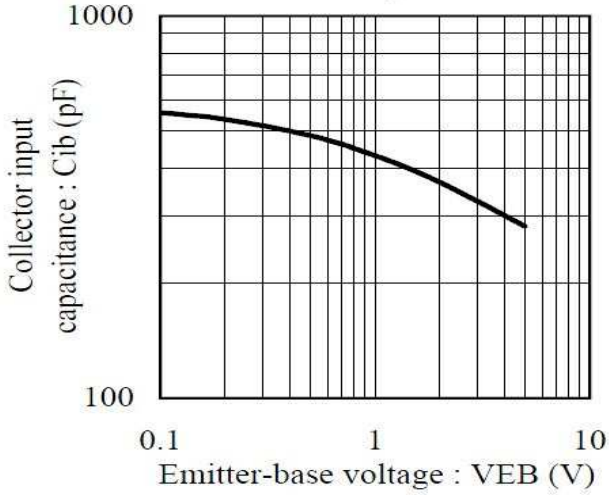


Figure 5. Frequency vs. Emitter Current
(V_{CE}=5V, T_A=25℃)

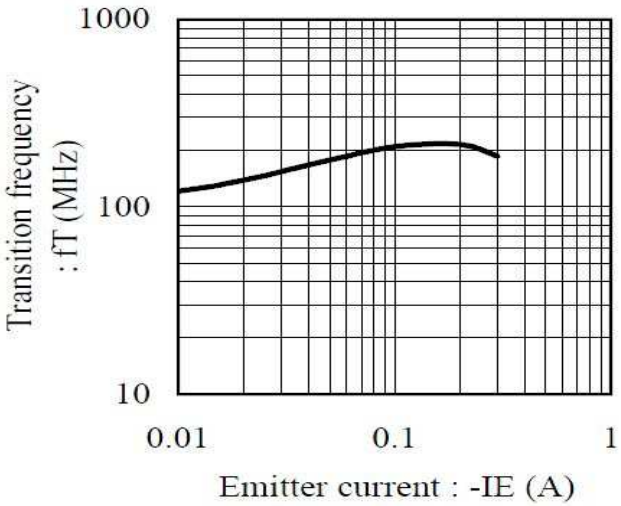
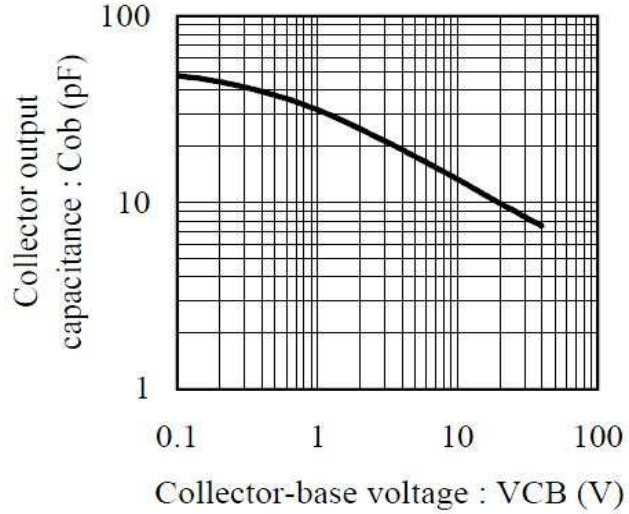


Figure 6. Cob vs. V_{CB}
(f=1MHz, T_A=25℃)



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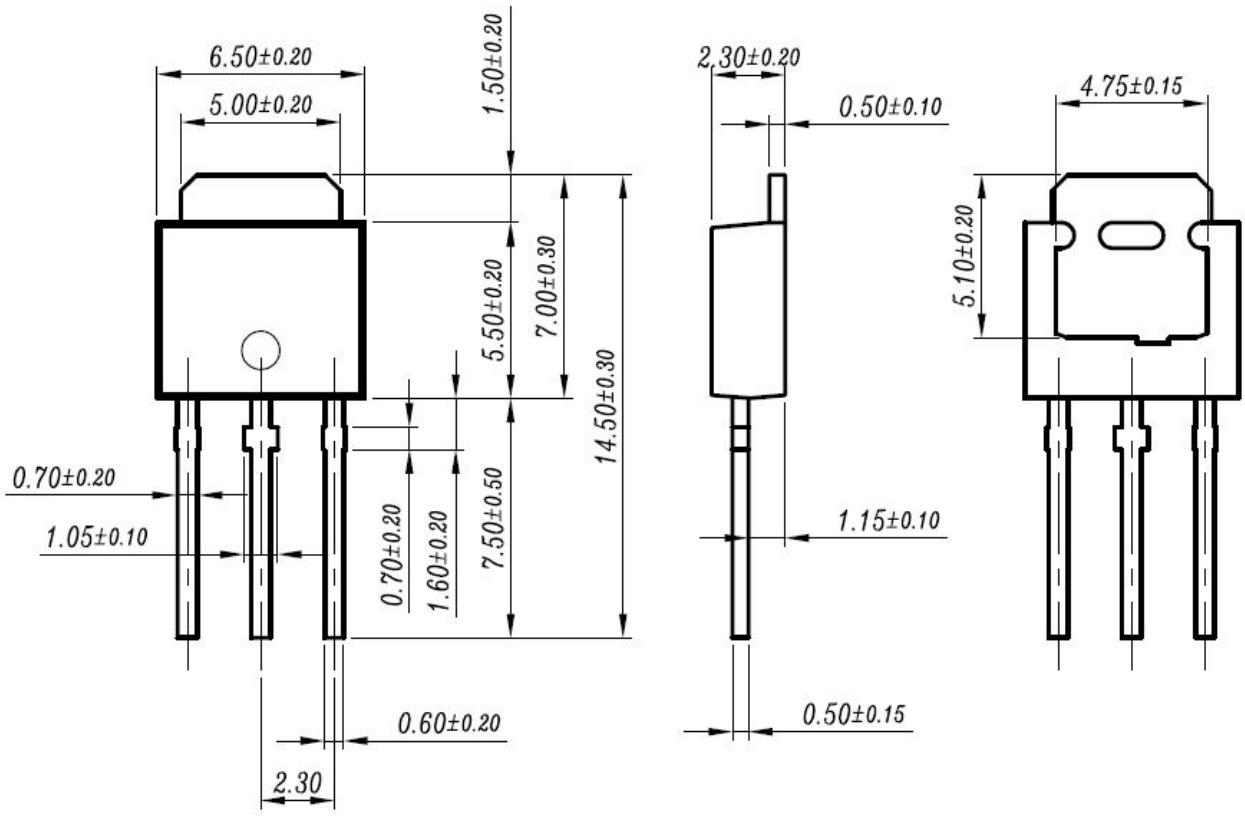
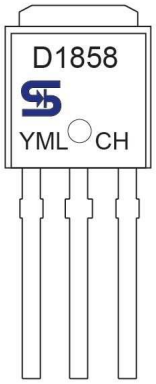
TO-251 Mechanical Drawing



Unit: Millimeters

Marking Diagram



Y = Year Code
M = Month Code for Halogen Free Product
(**O**=Jan, **P**=Feb, **Q**=Mar, **R**=Apl, **S**=May, **T**=Jun, **U**=Jul, **V**=Aug, **W**=Sep, **X**=Oct, **Y**=Nov, **Z**=Dec)
L = Lot Code

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