



TO-251
(IPAK)



TO-252
(DPAK)



Pin Definition:

1. Base
2. Collector
3. Emitter

PRODUCT SUMMARY

BV_{CEO}	400V
BV_{CBO}	700V
I_C	2A
$V_{CE(SAT)}$	0.6V @ $I_C / I_B = 1.5A / 0.5A$

Features

- High Voltage
- High Speed Switching

Structure

- Silicon Triple Diffused Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSC136LCP RO	TO-252	2.5Kpcs / 13" Reel
TSC136LCP ROG	TO-252	2.5Kpcs / 13" Reel
TSC136LCH C5	TO-251	70pcs / Tube
TSC136LCH C5G	TO-251	70pcs / Tube

Note: "G" denote for Halogen Free Product

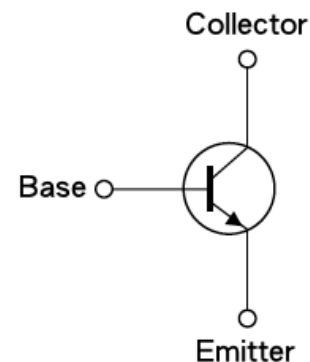
Absolute Maximum Rating ($T_a = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	700	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Total Dissipation @ $T_C \leq 25^\circ\text{C}$	P_{TOT}	40	W
Collector Peak Current ($t_p < 5\text{ms}$)	I_{CM}	4	A
Collector Current	I_C	2	A
Base Peak Current ($t_p < 5\text{ms}$)	I_{BM}	2	A
Base Current	I_B	1.5	A
Maximum Operating Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150	$^\circ\text{C}$

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Case Thermal Resistance	$R\theta_{JC}$	2.08	$^\circ\text{C/W}$

Block Diagram



Electrical Specifications

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	$I_C = 10\text{mA}, I_B = 0$	BV_{CBO}	700	--	--	V
Collector-Emitter Breakdown Voltage ^a	$I_C = 10\text{mA}, I_E = 0$	BV_{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 1\text{mA}, I_C = 0$	BV_{EBO}	9	--	--	V
Collector-Base Cutoff Current	$V_{CB} = 700\text{V}, I_E = 0$	I_{CBO}	--	--	100	μA
Collector-Emitter Cutoff Current	$V_{CE} = 400\text{V}, I_B = 0$	I_{EBO}	--	--	100	μA
Collector-Emitter Saturation Voltage ^a	$I_C = 0.5\text{A}, I_B = 0.1\text{A}$	$V_{CE(SAT)1}$	--	--	0.4	V
	$I_C = 1\text{A}, I_B = 0.25\text{A}$	$V_{CE(SAT)2}$	--	--	0.5	
	$I_C = 1.5\text{A}, I_B = 0.5\text{A}$	$V_{CE(SAT)3}$	--	--	0.6	
Base-Emitter Saturation Voltage ^a	$I_C = 0.5\text{A}, I_B = 0.1\text{A}$	$V_{BE(SAT)}$	--	--	1.2	V
DC Current Gain	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	$h_{FE 1}$	20	--	40	
	$V_{CE} = 5\text{V}, I_C = 2\text{A}$	$h_{FE 2}$	5	--	--	
Frequency	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$	f_T	4	--	--	MHz
Output Capacitance	$V_{CB} = 10\text{V}, f = 0.1\text{MHz}$	C_{ob}	--	21	--	pF
Turn On Time	$V_{CC} = 125\text{V}, I_C = 1\text{A}, I_{B1} = 0.2\text{A}$	t_{ON}	--	0.4	--	μs
Storage Time		t_{STG}	--	2.0	--	μs
Fall Time		t_f	--	0.16	--	μs

Notes:

a. Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$

Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Figure 1. Static Characteristics

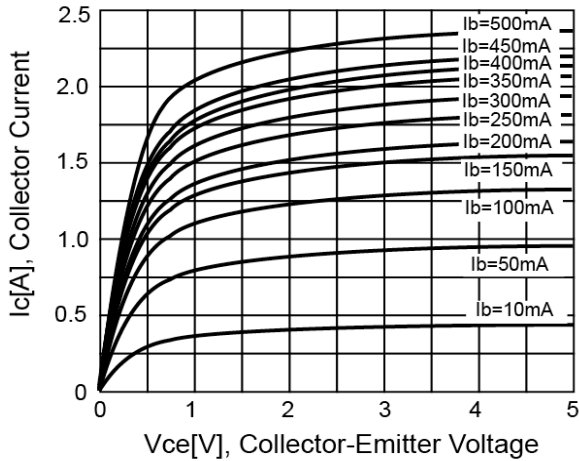


Figure 2. DC Current Gain

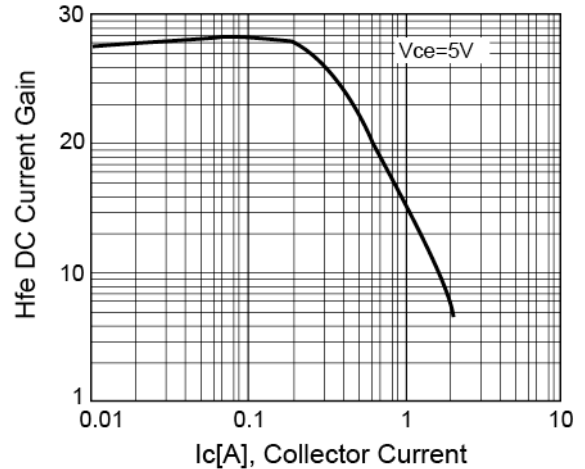


Figure 3. $V_{ce(sat)}$ v.s. $V_{be(sat)}$

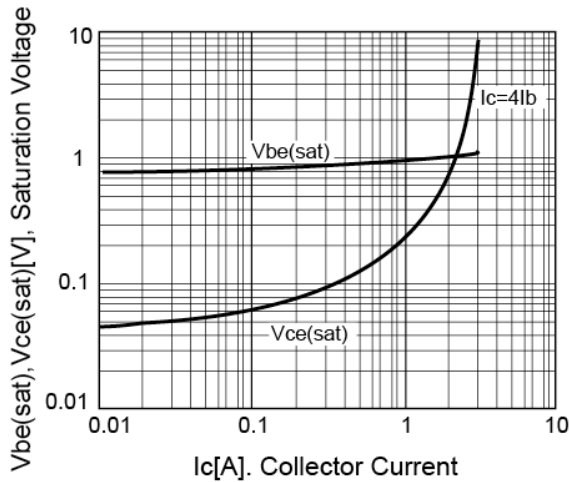
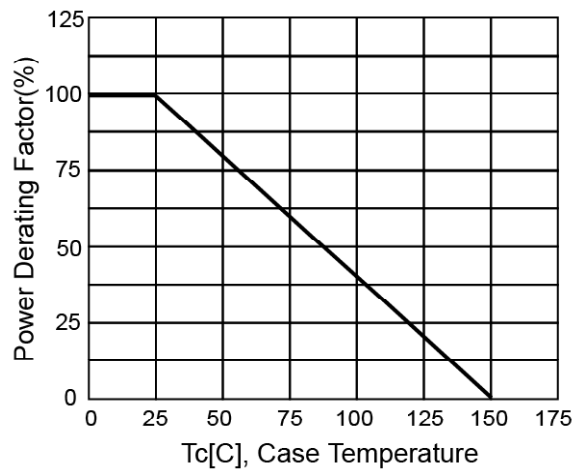
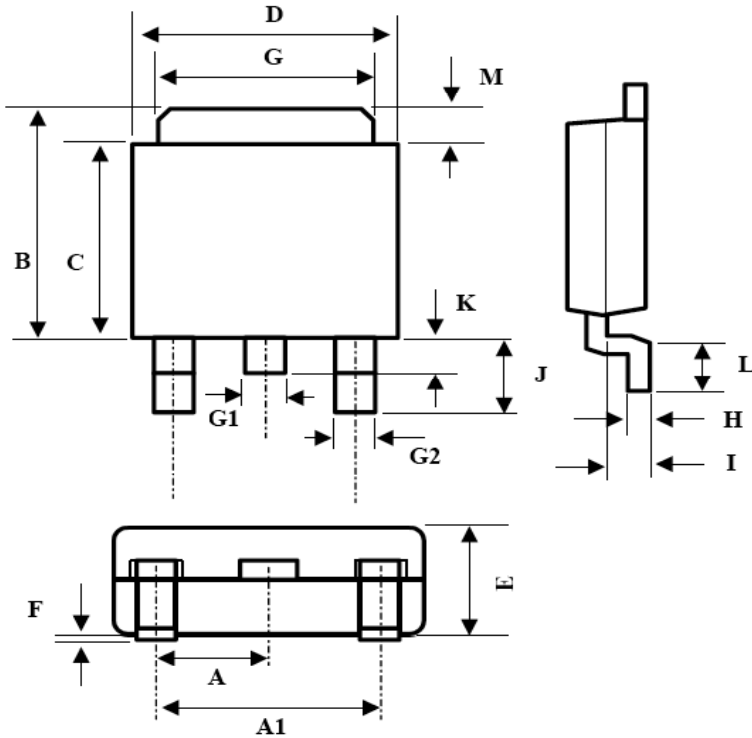


Figure 4. Power Derating



SOT-252 Mechanical Drawing



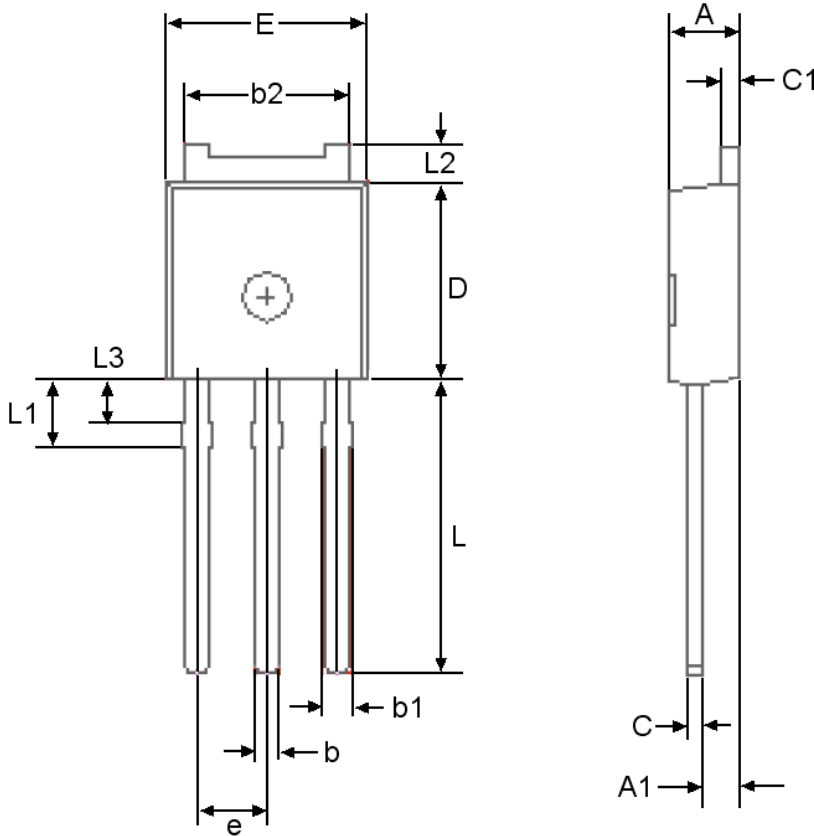
TO-252 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.3BSC		0.09BSC	
A1	4.6BSC		0.18BSC	
B	6.80	7.20	0.268	0.283
C	5.40	5.60	0.213	0.220
D	6.40	6.65	0.252	0.262
E	2.20	2.40	0.087	0.094
F	0.00	0.20	0.000	0.008
G	5.20	5.40	0.205	0.213
G1	0.75	0.85	0.030	0.033
G2	0.55	0.65	0.022	0.026
H	0.35	0.65	0.014	0.026
I	0.90	1.50	0.035	0.059
J	2.20	2.80	0.087	0.110
K	0.50	1.10	0.020	0.043
L	0.90	1.50	0.035	0.059
M	1.30	1.70	0.051	0.67

Marking Diagram



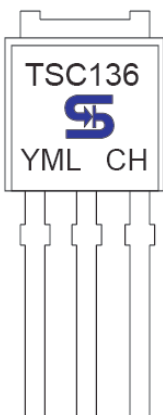
- Y** = Year Code
- M** = Month Code
(A=Jan, B=Feb, C=Mar, D=Apl, E=May, F=Jun, G=Jul, H=Aug, I=Sep, J=Oct, K=Nov, L=Dec)
- = Month Code for Halogen Free Product
(O=Jan, P=Feb, Q=Mar, R=Apl, S=May, T=Jun, U=Jul, V=Aug, W=Sep, X=Oct, Y=Nov, Z=Dec)
- L** = Lot Code

SOT-251 Mechanical Drawing



TO-251 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
C	0.46	0.58	0.018	0.023
C1	0.46	0.58	0.018	0.023
D	5.97	6.10	0.235	0.240
E	6.35	6.73	0.250	0.265
e	2.28 BSC.		0.90 BSC.	
L	8.89	9.65	0.350	0.380
L1	1.91	2.28	0.075	0.090
L2	0.89	1.27	0.035	0.050
L3	1.15	1.52	0.045	0.060

Marking Diagram



- Y** = Year Code
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(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
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