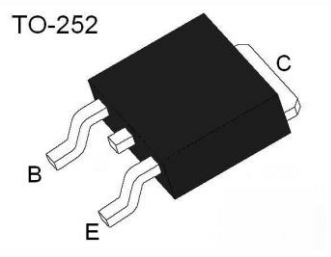
Applications

• Audio power amplifier



Features

- High DC current gain
- Low collector-emitter saturation voltage
- High current gain bandwidth product

Absolute Maximum Rating (Ta=25℃)

Parameter		Symbol	Value	Unit
Collector-base voltage		BV_{CBO}	50	V
Collector-emitter voltage		BV_{CEO}	50	V
Emitter-base voltage		BV_{EBO}	5	V
Collector current (DC)		I_C	2	A
Collector current (Peak)		I_{CM}	3	A
Base current		I_B	0.4	A
Total device dissipation	T_C=25℃	P_D	15	W
	Derate above 25℃		0.1	W/℃
Total device dissipation	T_A=25℃	P_D	1.68	W
	Derate above 25℃		0.011	W/℃
Junction temperature		T_j	150	℃
Storage temperature		T_{stg}	-65～150	℃

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Resistances

Parameter	Symbol	Value	Units
Maximum thermal resistance, junction-case	$R_{\theta JC}$	10	℃/W
Maximum thermal resistance, junction-ambient [1]	$R_{\theta JA}$	89.3	℃/W

1.These ratings are applicable when surface mounted on the minimum pad sizes recommended.

Electrical Characteristics (Ta=25℃, unless otherwise noted)

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage		BV_{CBO}	I_C = 100μA，I_E = 0	50			V
Collector-emitter breakdown voltage		BV_{CEO}	I_C = 10mA，I_B = 0	50			V
Emitter-base breakdown voltage		BV_{EBO}	I_E = 100μA，I_C = 0	5			V
Collector -base cut-off current		I_{CBO}	V_{CB} = 50V，I_E = 0			100	nA
Emitter- base cut-off current		I_{EBO}	V_{EB} = 5V，I_C = 0			100	nA
DC current gain [2]	T_A=25℃	h_{FE}	V_{CE} = 2V，I_C= 0.5A	120			
			V_{CE} = 2V，I_C= 2A	40			
	-40℃≤T_j≤150℃		V_{CE} = 1.6V，I_C= 0.75A	80			
Collector-emitter saturation voltage [2]		$V_{CE(sat)}$	I_C = 1A, I_B = 0.05A			0.3	V
Base -emitter saturation voltage [2]		$V_{BE(sat)}$	I_C = 1A, I_B = 0.05A			1.2	V
Base−emitter on voltage [2]	T_A=25℃	$V_{BE(on)}$	V_{CE} = 2V，I_C= 1A			1.2	V
	-40℃≤T_j≤150℃		$_{CE}$ = 1.6V，I_C= 0.75A			0.95	
Current gain bandwidth product [3]		f_T	V_{CE} = 10V，I_C = 0.1A f_{test} =10MHz	65			MHz
Output capacitance		C_{ob}	V_{CB} = 10V，f=1MHz			80	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2.Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%

3.f_T= | h_{fe} | •f_{test}

Typical Characteristics

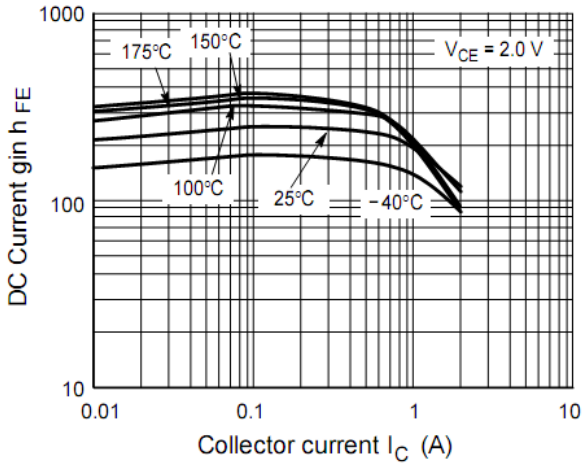


Figure 1. DC current Gain

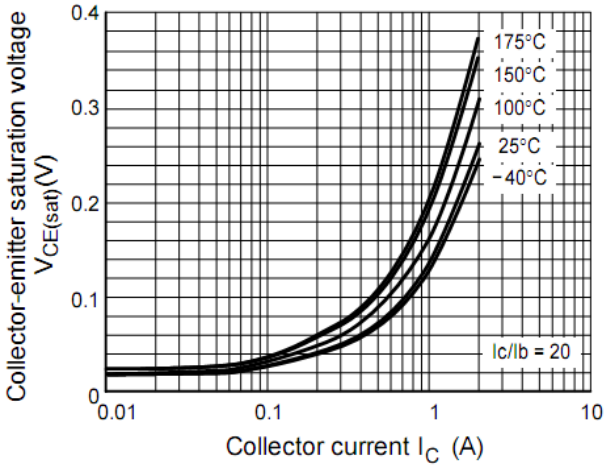


Figure 2. Collector−emitter saturation voltage

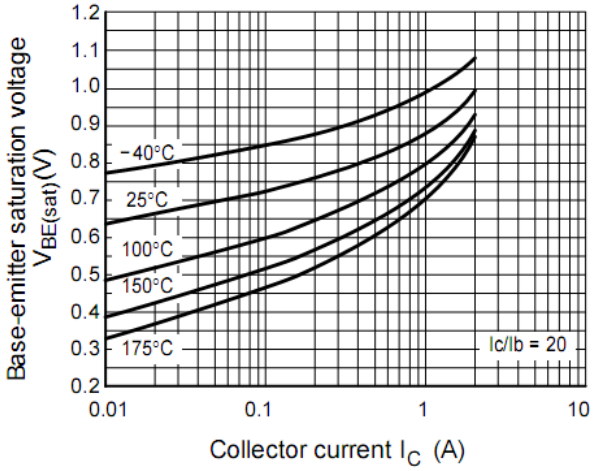


Figure 3. Base−emitter saturation voltage

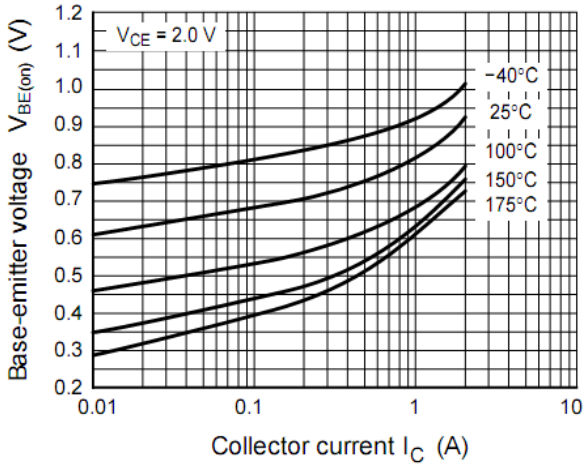


Figure 4. Base−emitter voltage

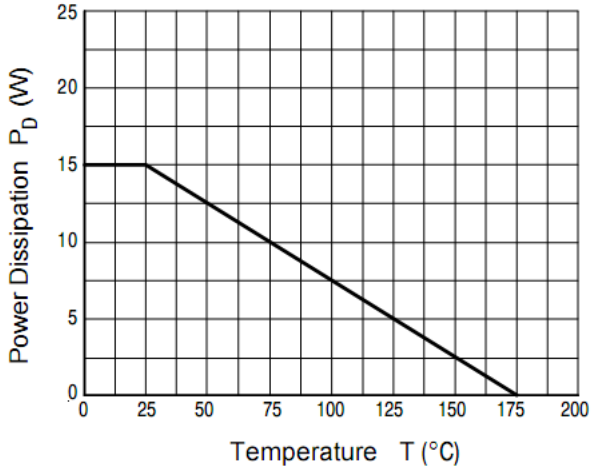


Figure 5. Power Derating

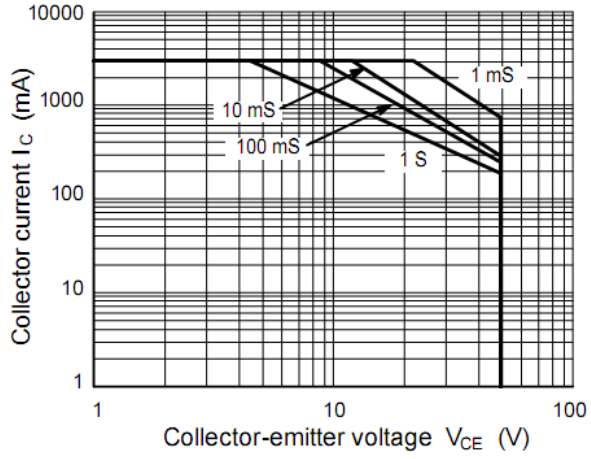


Figure 6. Safe Operating Area

Typical Characteristics

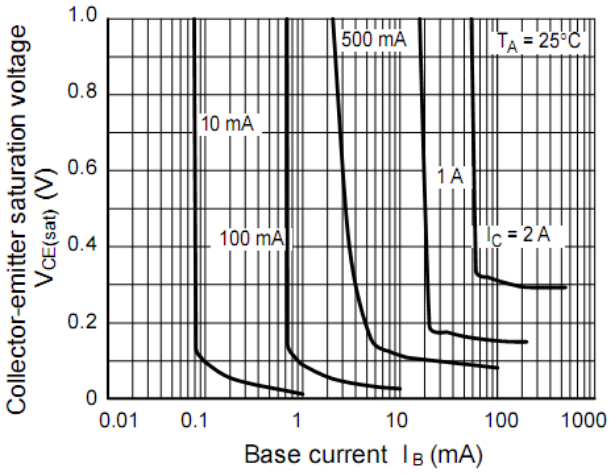


Figure 7. Saturation Region

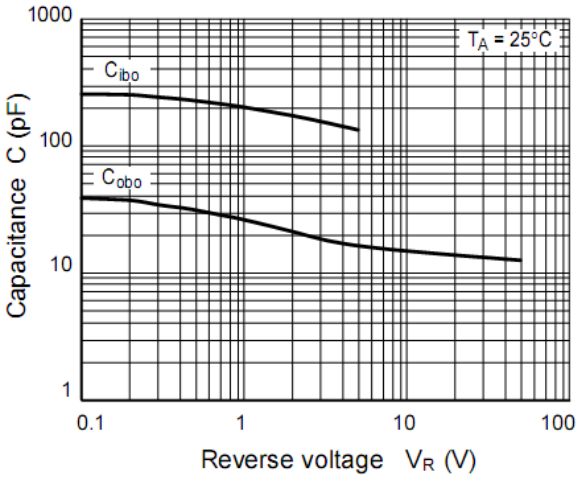


Figure 8. Capacitance

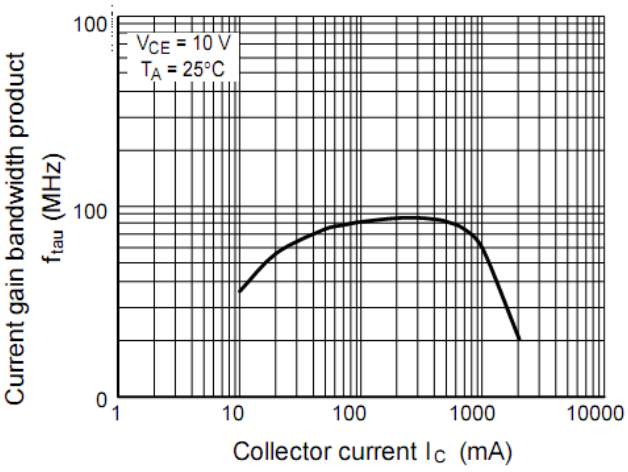


Figure 9. Current Gain Bandwidth Product

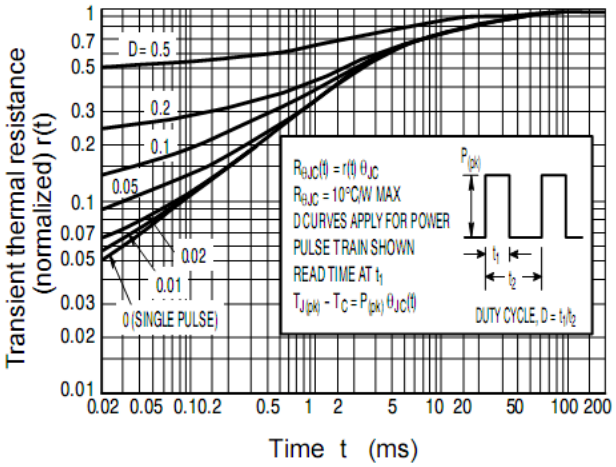
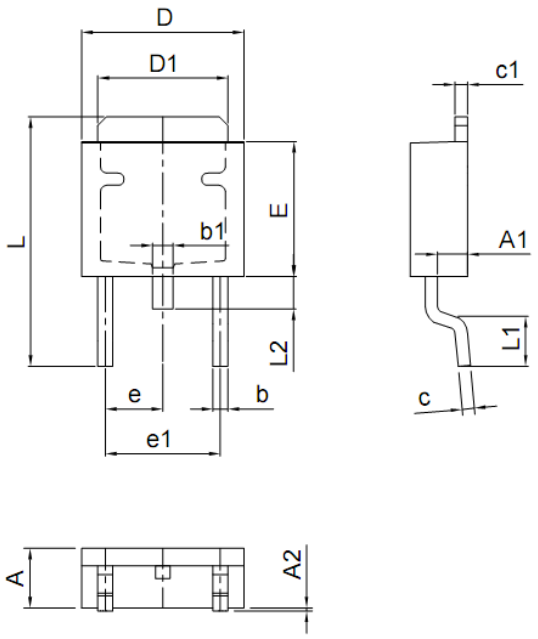


Figure 10. Thermal Response

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.094
A1	1.00	1.40	0.039	0.055
A2	0.00	0.15	0.000	0.006
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.20	6.70	0.244	0.264
D1	5.10	5.50	0.201	0.217
E	5.50	6.00	0.217	0.236
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.70	10.40	0.382	0.409
L1	1.40	1.70	0.055	0.063
L2	0.60	1.20	0.024	0.047

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