

Complementary power Darlington transistors

General Description

The devices are manufactured in planar technology with “base island” layout and monolithic Darlington configuration. The resulting transistors show exceptional high gain performance coupled with very low saturation voltage

Product Summary

VCBO	IC
100V	8A

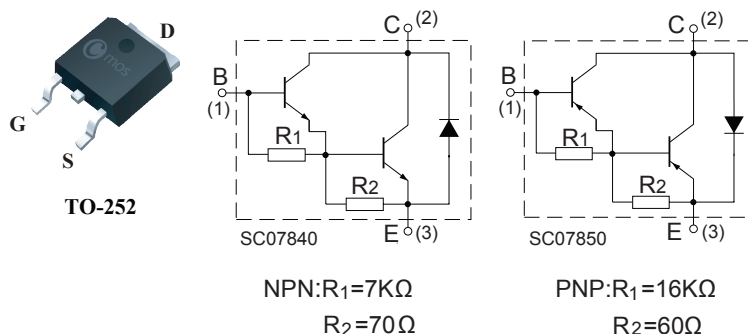
Applications

- General purpose linear and switching

Features

- Low collector-emitter saturation voltage
- Integrated antiparallel collector-emitter diode

TO-252 Pin Configuration



Device summary

Order codes	Marking	Polarity	Package	Packaging
MJD122G	J122G	NPN	DPAK	Tape and reel
MJD127G	J127G	PNP		

Electrical ratings

Symbol	Parameter	Value	Units
V_{CBO}	Collector-base voltage ($I_E = 0$)	100	V
V_{CEO}	Collector-base voltage ($I_B = 0$)	100	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	8	A
I_{CM}	Collector peak current	16	A
I_B	Base current	0.12	A
P_{TOT}	Total dissipation at $T_{case} = 25^\circ\text{C}$	20	W
T_{STG}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	150	$^\circ\text{C}$

Thermal data

Symbol	Parameter	Value	Unit
R_{thj-c}	Thermal resistance junction-case max.	6.25	$^{\circ}\text{C}/\text{W}$

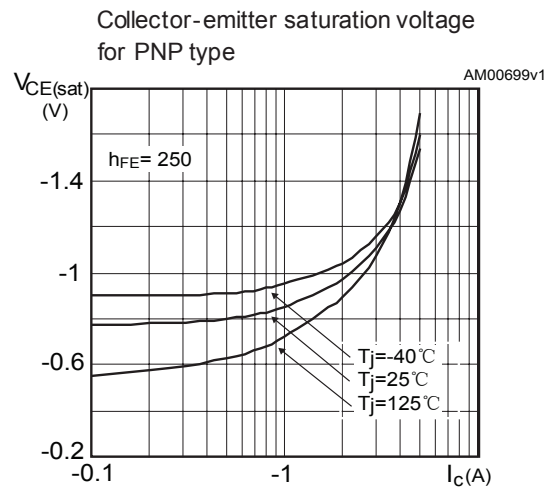
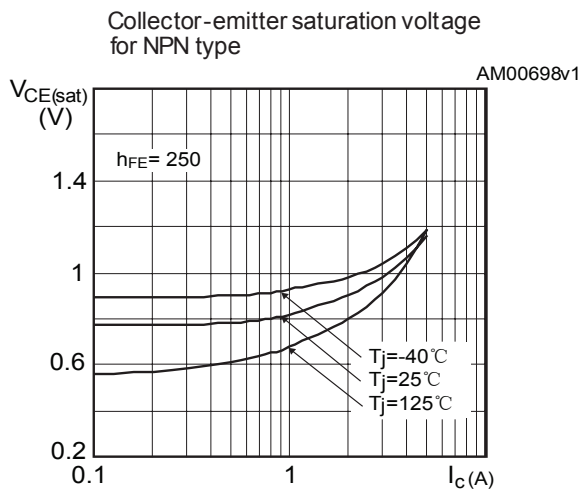
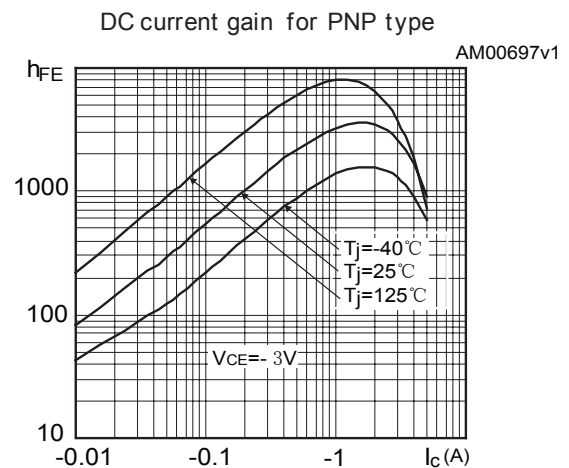
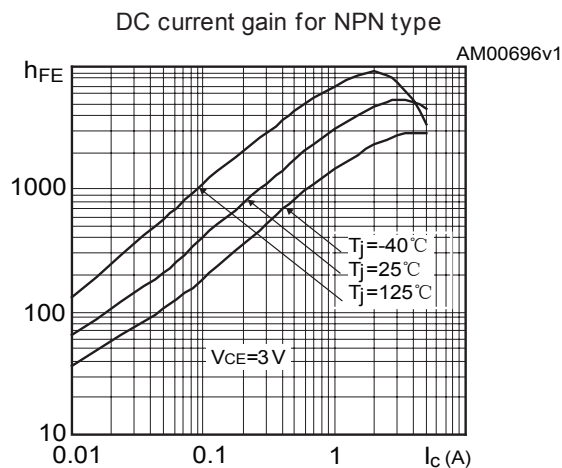
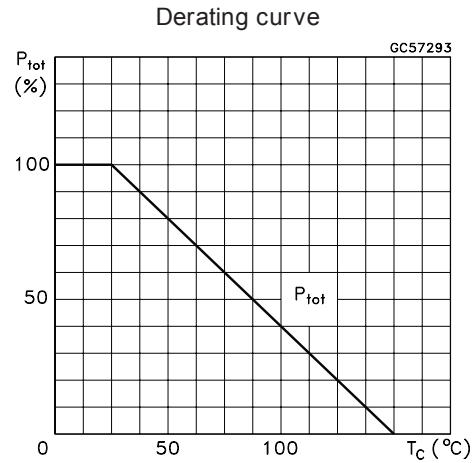
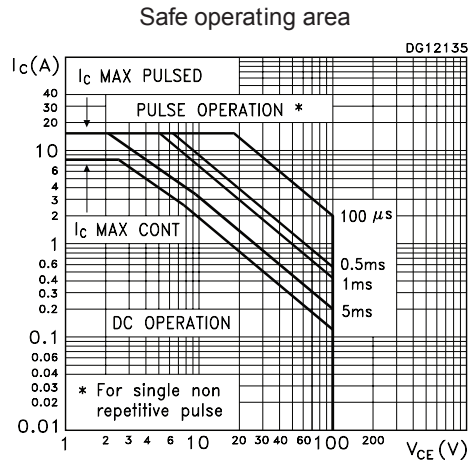
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_{CB0}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 100\text{V}$	---	---	10	μA
I_{CEO}	Collector cut-off current ($I_B = 0$)	$V_{CE} = 50\text{V}$	---	---	10	μA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5\text{V}$	---	---	2	mA
$V_{CEO(sus)}^{(1)}$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 30\text{mA}$	100	---	---	V
$V_{CE(sat)}^{(1)}$	Collector-emitter sustaining voltage	$I_C = 4\text{A}$ $I_B = 16\text{mA}$	---	---	2	V
		$I_C = 8\text{A}$ $I_B = 80\text{mA}$	---	---	4	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 8\text{A}$ $I_B = 80\text{mA}$	---	---	4.5	V
$V_{BE(on)}^{(1)}$	Base-emitter on voltage	$I_C = 4\text{A}$ $V_{CE} = 4\text{V}$	---	---	2.8	V
h_{FE}	DC current gain	$I_C = 4\text{A}$ $V_{CE} = 4\text{V}$	1000	---	8000	
		$I_C = 2\text{A}$ $V_{CE} = 4\text{V}$	100	---	---	

Note (1) Pulsed duration = $300\mu\text{s}$, duty cycle $\leq 1.5\%$

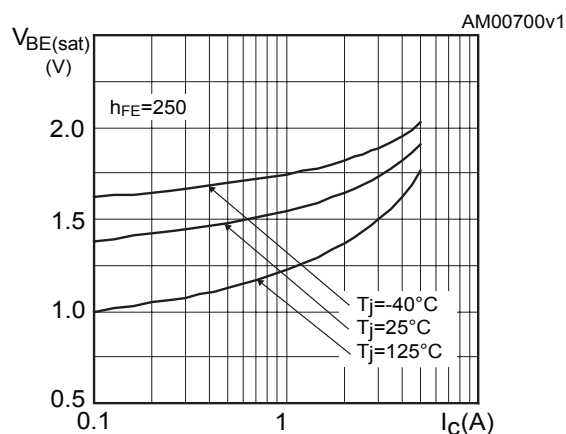
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Electrical characteristic (curves)

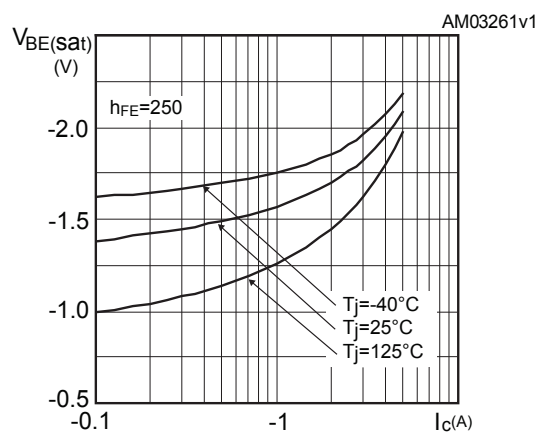


Electrical characteristic (curves)

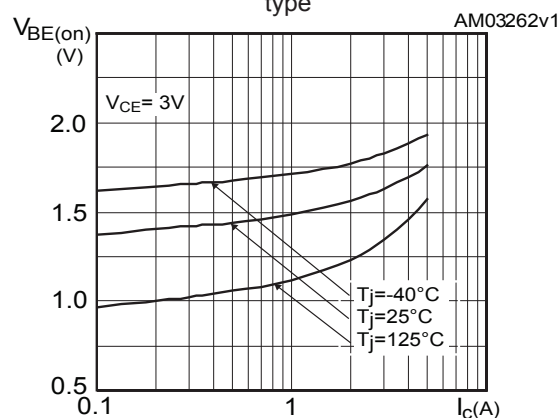
Base-emitter saturation voltage for NPN type



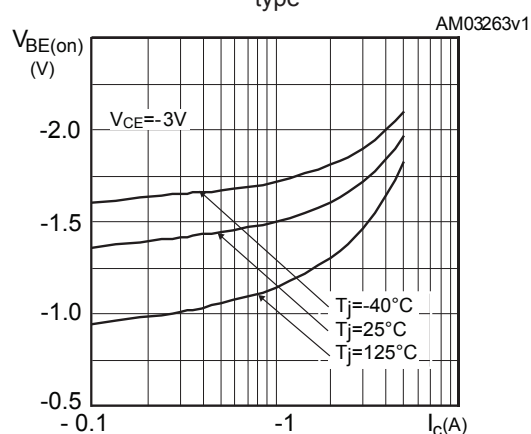
Base-emitter saturation voltage for PNP type



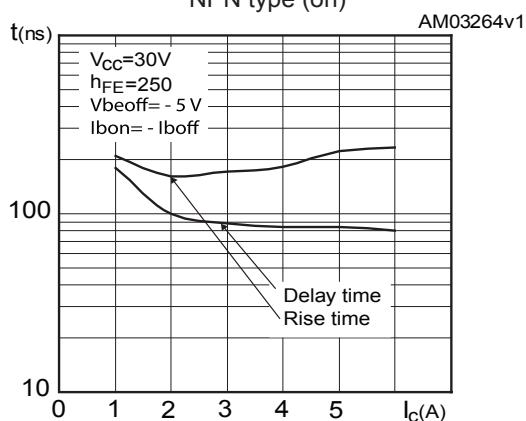
Base-emitter on voltage for NPN type



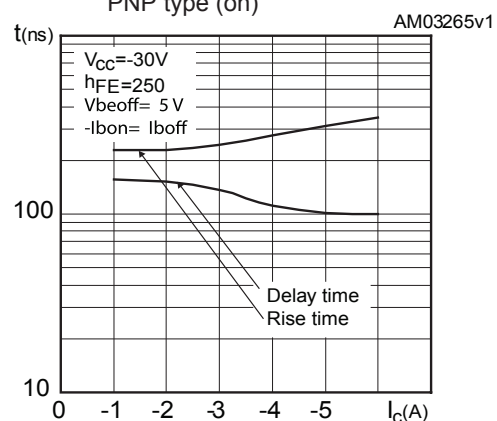
Base-emitter on voltage for PNP type



Resistive load switching times for NPN type (on)

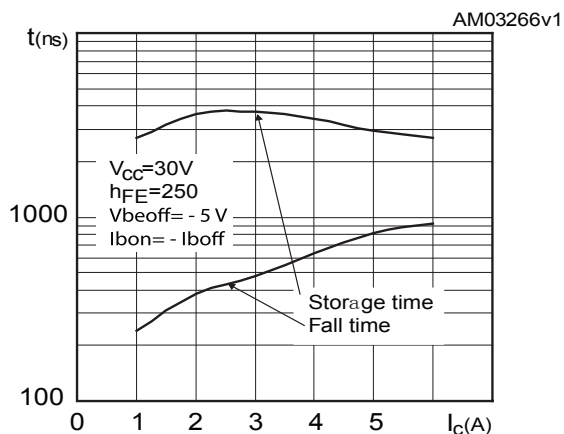


Resistive load switching times for PNP type (on)

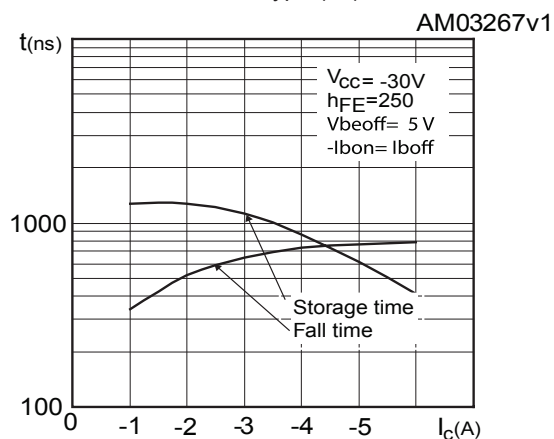


Electrical characteristic (curves)

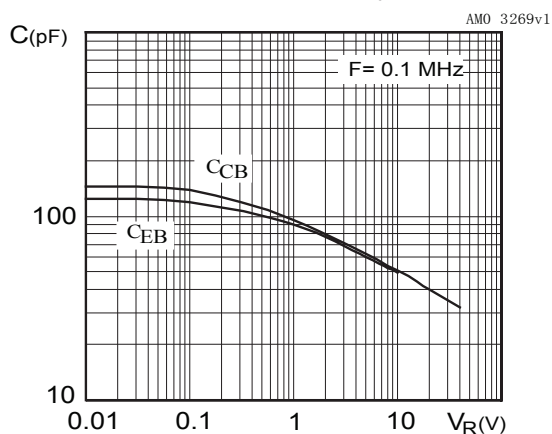
Resistive load switching times for
NPN type (off)



Resistive load switching times for
PNP type (off)



Capacitances for NPN type



Capacitances for PNP type

