MJD122U/MJD127U

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

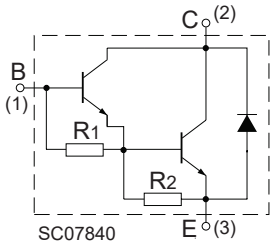
Features

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

TO-251A Pin Configuration

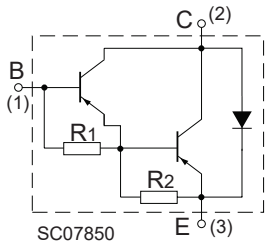


TO-251A



SC07840

NPN:R_1=7KΩ
R_2=70Ω



SC07850

PNP:R_1=16KΩ
R_2=60Ω

Device summary

Order codes	Marking	Polarity	Package	Packaging
MJD122U	J122U	NPN	TO-251A	Tape and reel
MJD127U	J127U	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 Tcase = 25°C	20	W
T_{STG}	Storage Temperature	-65 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal data

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

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

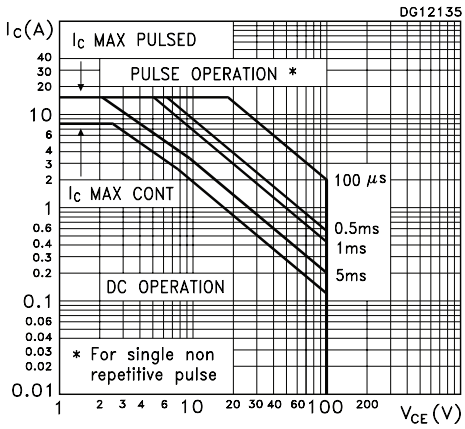
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_{CB0}	Collector cut-off current (I_E = 0)	V_{CB} =100V	---	---	10	μA
I_{CEO}	Collector cut-off current($I_{B=0}$)	V_{CE}=50V	---	---	10	μA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB}=5V	---	---	2	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining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

Note (1) Pulsed duration = 300μs, duty cycle ≤1.5%

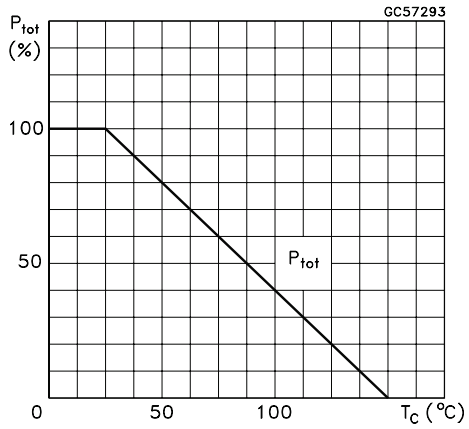
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Electrical characteristic (curves)

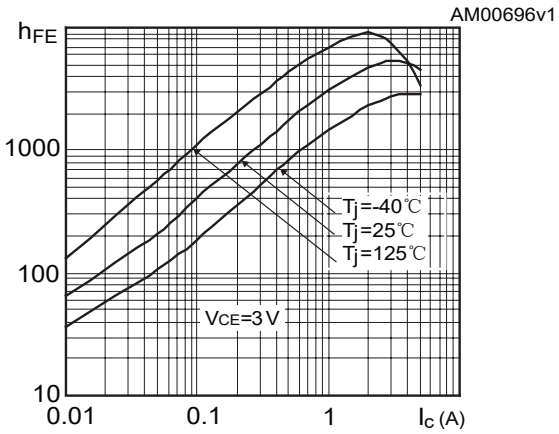
Safe operating area



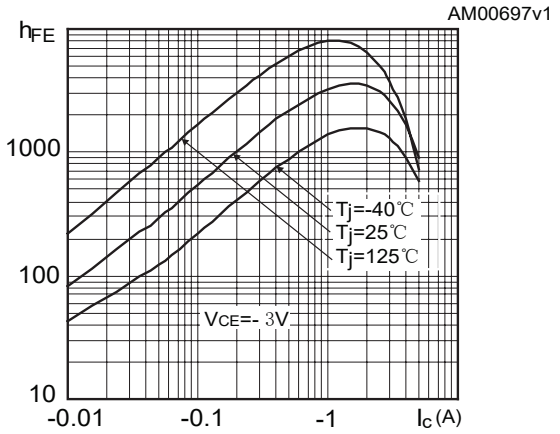
Derating curve



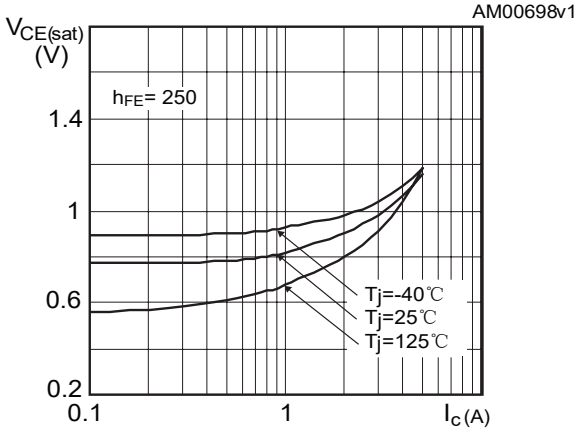
DC current gain for NPN type



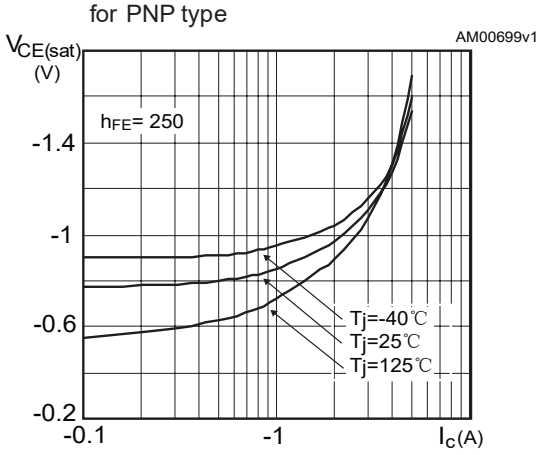
DC current gain for PNP type



Collector-emitter saturation voltage for NPN type

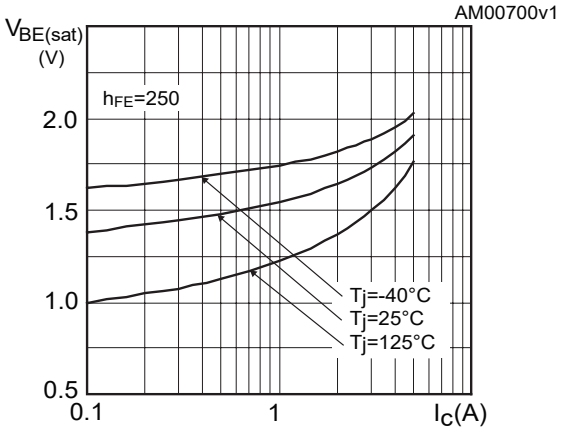


Collector-emitter saturation voltage for PNP type

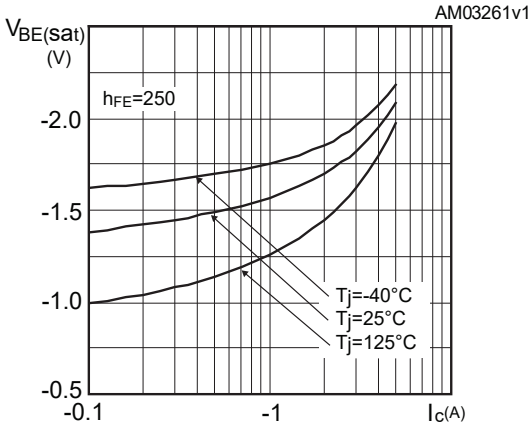


Electrical characteristic (curves)

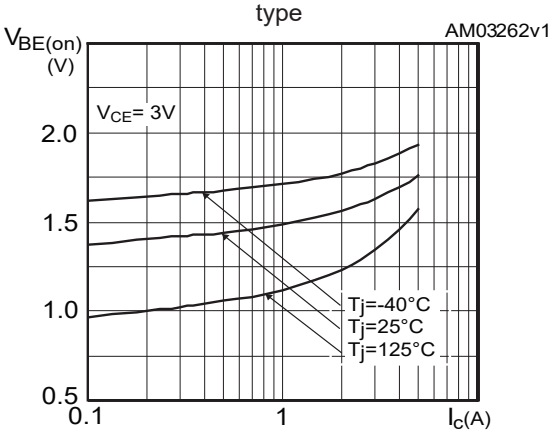
Base-emitter saturation voltage for NPN type



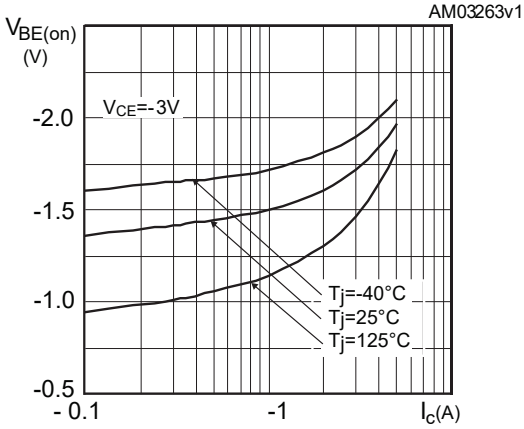
Base-emitter saturation voltage for PNP type



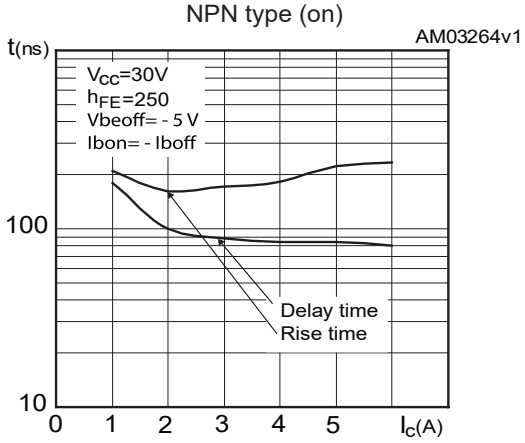
Base-emitter on voltage for NPN type



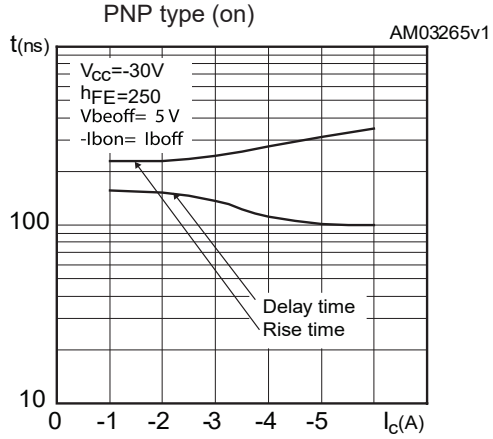
Base-emitter on voltage for PNP type



Resistive load switching times for NPN type (on)

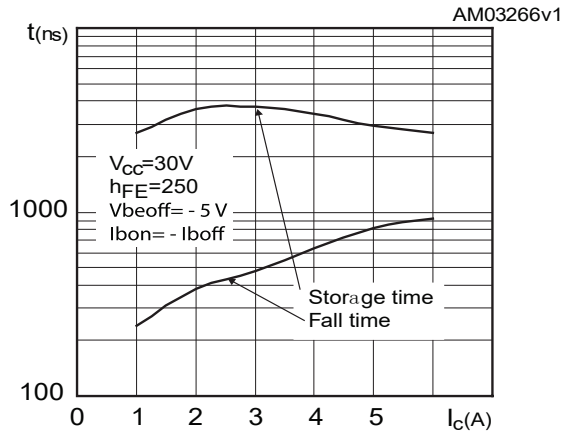


Resistive load switching times for PNP type (on)

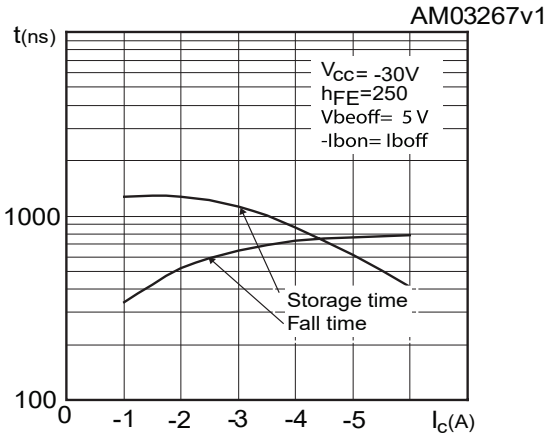


Electrical characteristic (curves)

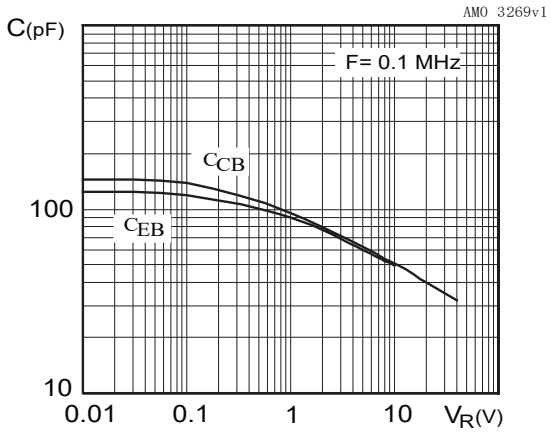
Resistive load switching times for NPN type (off)



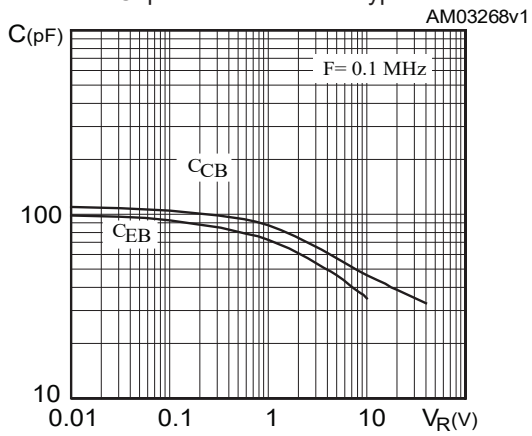
Resistive load switching times for PNP type (off)



Capacitances for NPN type



Capacitances for PNP type



Package Dimension

TO-251A Unit :mm

