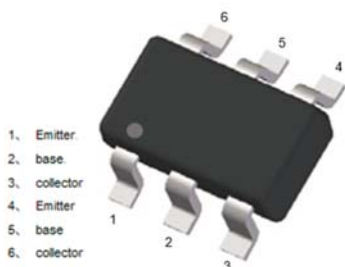
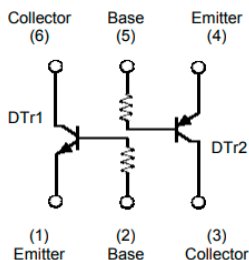


Dual NPN+PNP Digital Transistors (Built-in Resistors)



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package:** SOT-363S
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ Maximum Ratings ($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Value
Device marking code				D14
Collector-base voltage	V_{CBO}	V	$I_C=50\mu\text{A}$	50
Collector-emitter voltage	V_{CEO}	V	$I_C=1\text{mA}$	50
Emitter-base voltage	V_{EBO}	V	$I_E=50\mu\text{A}$	5
Collector current	I_C	mA		100
Power dissipation	P_D	mW		150
Junction temperature	T_J	$^{\circ}\text{C}$		-55 to +150
Storage temperature	T_{STG}	$^{\circ}\text{C}$		-55 to +150

DTR2-PNP

Item	Symbol	Unit	Conditions	Value
Collector-base voltage	V_{CBO}	V	$I_C=-50\mu\text{A}$	-50
Collector-emitter voltage	V_{CEO}	V	$I_C=-1\text{mA}$	-50
Emitter-base voltage	V_{EBO}	V	$I_E=-50\mu\text{A}$	-5
Collector current	I_C	mA		-100
Junction temperature	T_J	$^{\circ}\text{C}$		-55 to +150
Storage temperature	T_{STG}	$^{\circ}\text{C}$		-55 to +150



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■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V _{(BR)CBO}	V	I _C =50uA	50		
Collector-emitter breakdown voltage	V _{(BR)CEO}	V	I _C =1mA	50		
Emitter-base breakdown voltage	V _{(BR)EBO}	V	I _E =50uA	5		
Collector-base cut-off current	I _{CBO}	uA	V _{CB} =50V			0.5
Emitter-base cut-off current	I _{EBO}	uA	V _{EB} =4V			0.5
DC current gain	h _{FE}		V _{CE} =5V, I _C =1mA	100		600
Input resistance	R ₁	kΩ		3.29	4.7	6.11
Collector-emitter saturation voltage	V _{CE(sat)}	V	I _C =5mA, I _B =0.5mA			0.3
Transition frequency	f _T	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz		250	

DTR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V _{(BR)CBO}	V	I _C =-50uA	-50		
Collector-emitter breakdown voltage	V _{(BR)CEO}	V	I _C =-1mA	-50		
Emitter-base breakdown voltage	V _{(BR)EBO}	V	I _E =-50uA	-5		
Collector-base cut-off current	I _{CBO}	uA	V _{CB} =-50V			-0.5
Emitter-base cut-off current	I _{EBO}	uA	V _{EB} =-4V			-0.5
DC current gain	h _{FE}		V _{CE} =-5V, I _C =-1mA	100		600
Input resistance	R ₁	kΩ		32.9	47	61.1
Collector-emitter saturation voltage	V _{CE(sat)}	V	I _C =-10mA, I _B =-0.5mA			-0.3
Transition frequency	f _T	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz		250	

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R _{θJ-A} ⁽¹⁾	°C/W	830
Thermal resistance, junction-to-case	R _{θJ-C} ⁽¹⁾	°C/W	664

Note: (1) Device mounted on PCB, single-sided copper, with standard footprint.

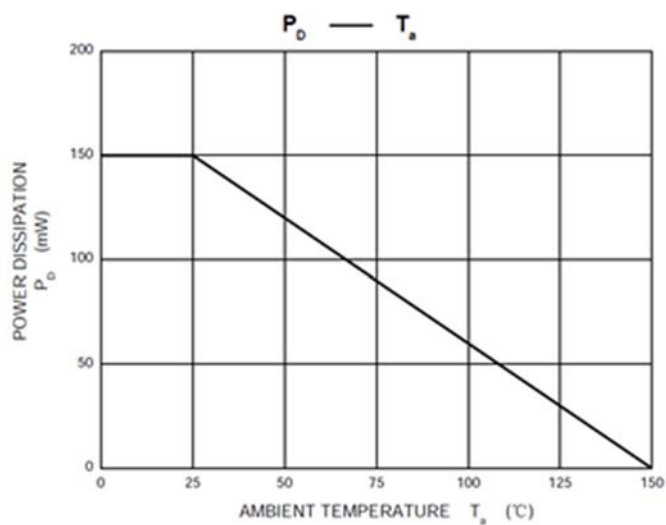
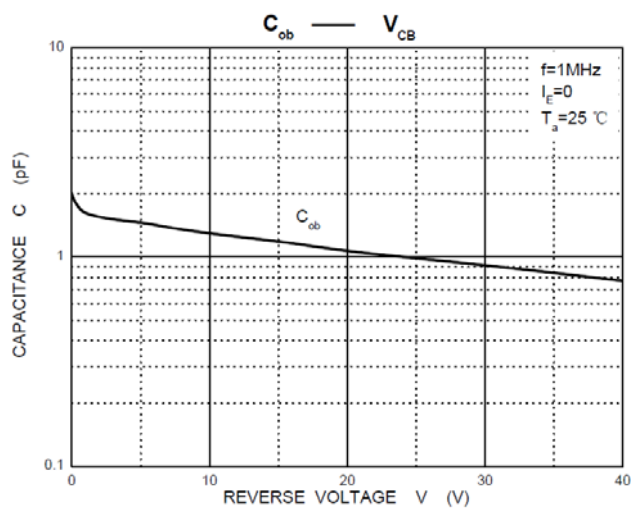
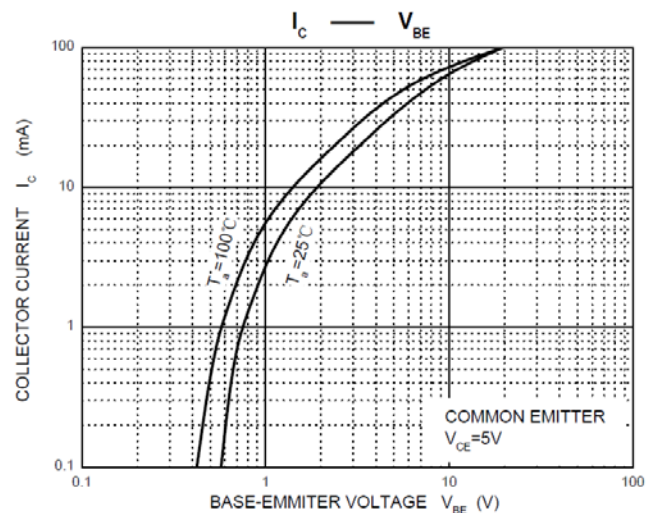
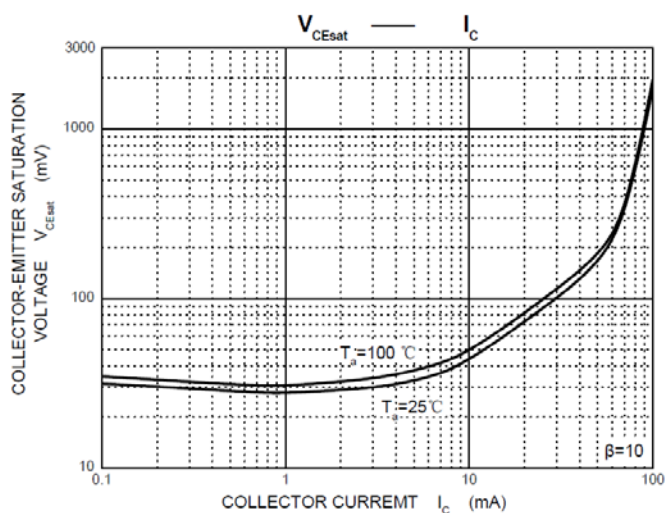
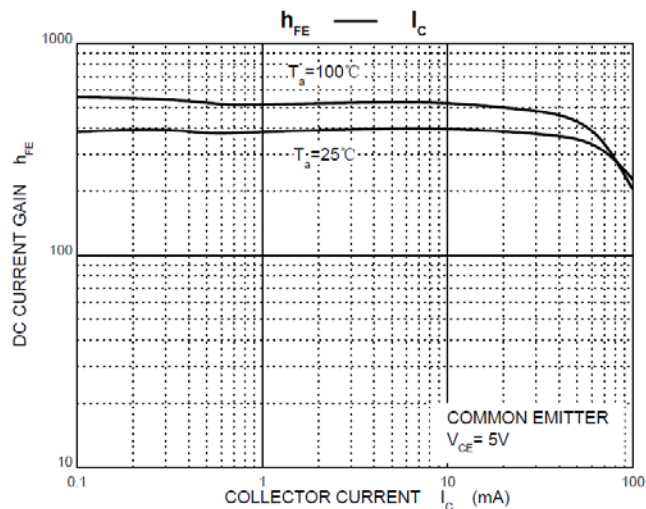
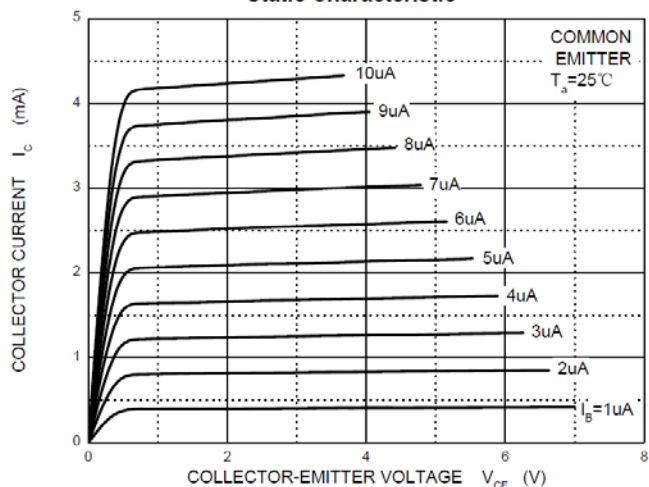


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■ Characteristics

DTR1-NPN

Static Characteristic



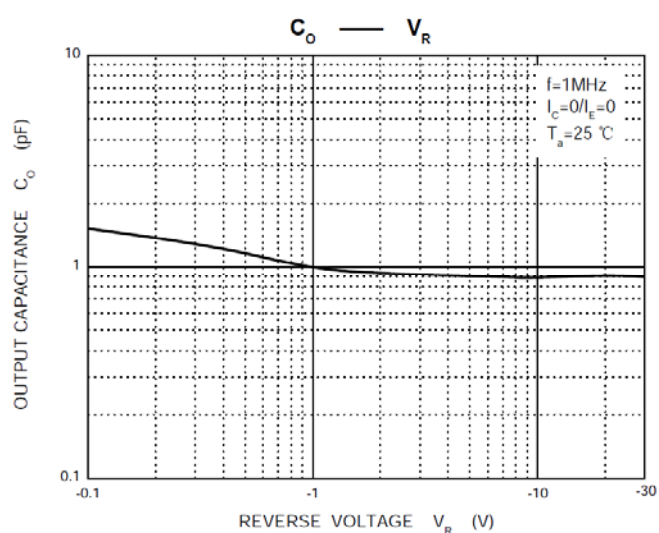
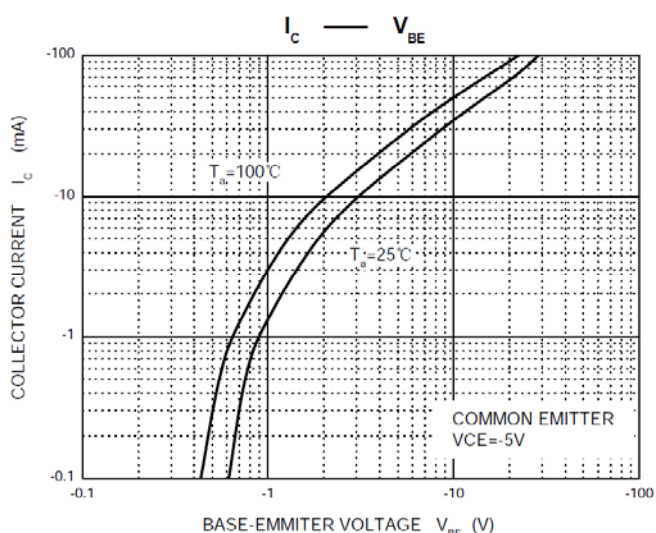
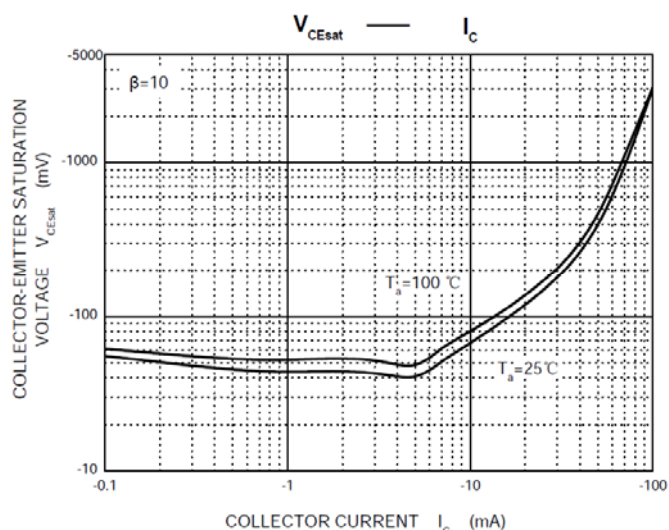
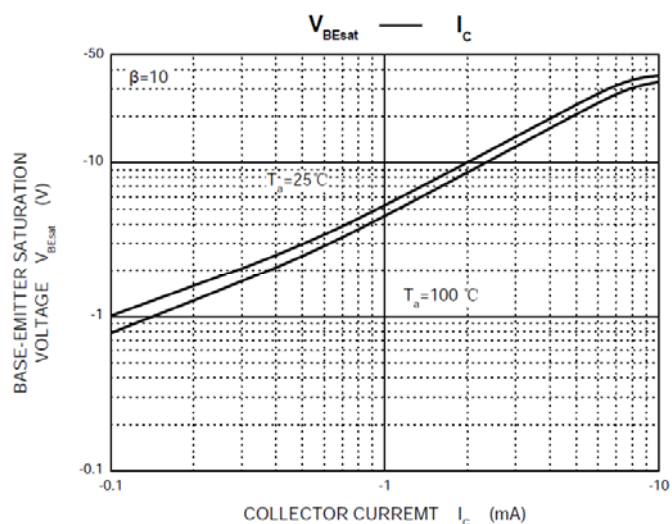
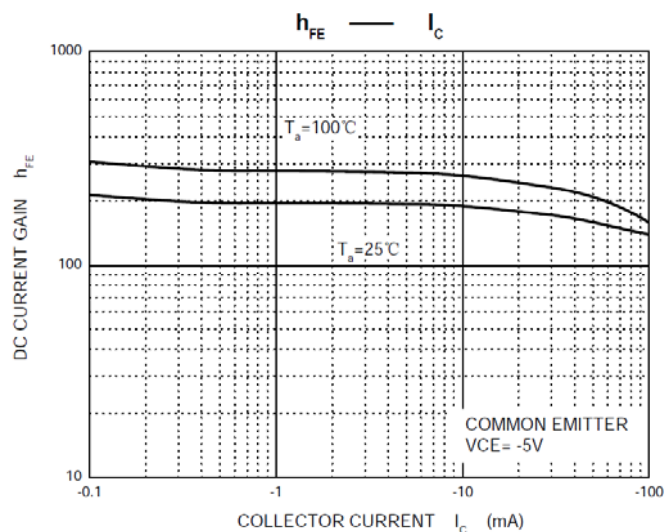
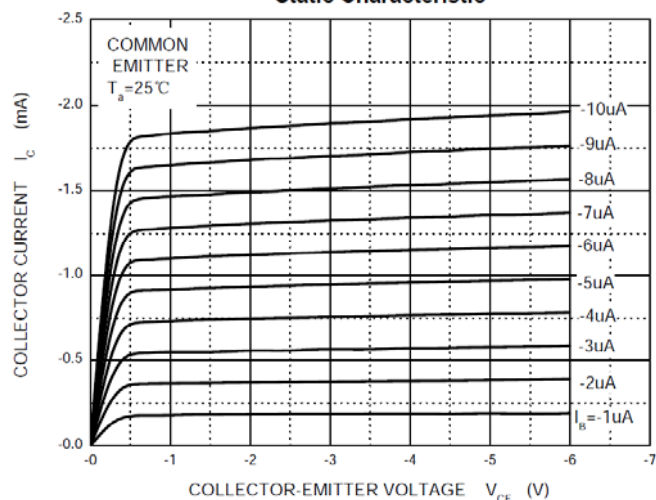


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■ Characteristics

DTR2-PNP

Static Characteristic





Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
UMD14NS	F2	Approximate 0.009	3000	30000	120000	7" reel
UMD14NS	F3	Approximate 0.009	10000	/	210000	7" reel

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
E	0.15	0.25	0.35
B	1.15	1.25	1.35
C	2.00	2.10	2.20
P	0.650BSC		
A	1.80	2.00	2.20
T	0.00	0.05	0.100
D	0.90	0.95	1.00
L1	0.20	0.30	0.40
a	4*±4°		
M	0.10	0.15	0.25

Figure 1 shows a plan view of a 2x3 grid of rectangular columns. The columns are arranged in two rows and three columns. The horizontal spacing between the centerlines of the columns is 0.650 m. The vertical spacing between the centerlines of the rows is 1.940 m. The width of each column is 0.400 m, and the depth of each column is 0.800 m. The unit is mm.



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