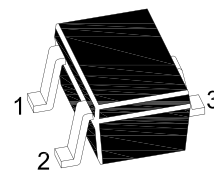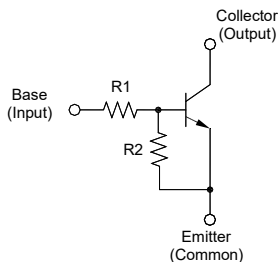# MMDTC143ZE

NPN Silicon Epitaxial Planar Digital Transistor

Features

• With built-in bias resistors

• Simplify circuit design

• Reduce a quantity of parts and
  manufacturing process

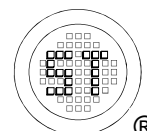1.Base 2.Emitter 3.Collector
SOT-523 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	50	V
Input Voltage	V_I	- 10 to + 40	V
Collector Current	I_C	100	mA
Power Dissipation	P_{tot}	150	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 55 to + 150	°C

Thermal Characteristics

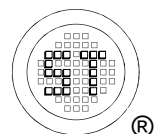| Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [1]	$R_{\theta JA}$	833	°C/W

[1] Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

MMDTC143ZE

Characteristics at T_a = 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 10 mA	h_{FE}	80	-	-	-
Collector Base Cutoff Current at V_{CB} = 50 V	I_{CBO}	-	-	0.1	µA
Emitter Base Cutoff Current at V_{EB} = 5 V	I_{EBO}	-	-	1.8	mA
Collector Emitter Saturation Voltage at I_C = 5 mA, I_B = 0.25 mA	$V_{CE(sat)}$	-	-	0.25	V
Input on Voltage at V_{CE} = 0.3 V, I_C = 5 mA	$V_{I(on)}$	-	-	1.3	V
Input off Voltage at V_{CE} = 5 V, I_C = 100 µA	$V_{I(off)}$	0.5	-	-	V
Transition frequency at V_{CE} = 10 V, $-I_E$ = 5 mA, f = 100 MHz	f_T	-	250	-	MHz
Input Resistance	R_1	3.29	4.7	6.11	KΩ
Resistance Ratio	R_2 / R_1	8	10	12	-

MMDTC143ZE

Electrical Characteristic Curves

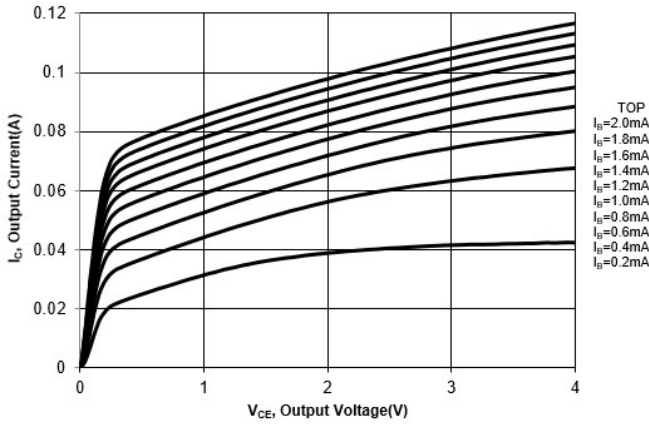Fig. 1 Output Characteristics Curve

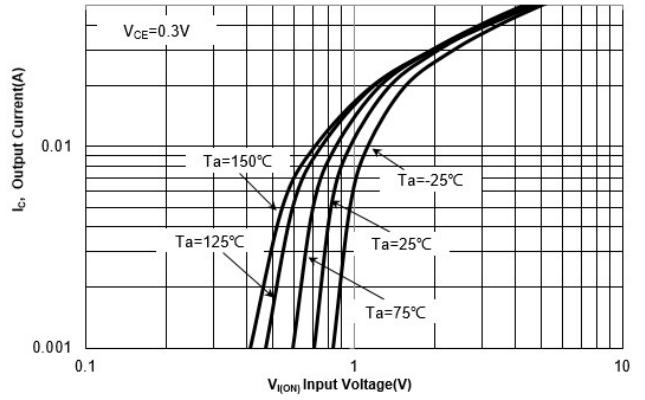Fig. 2 Output Current vs. $V_{I(ON)}$ Input Voltage

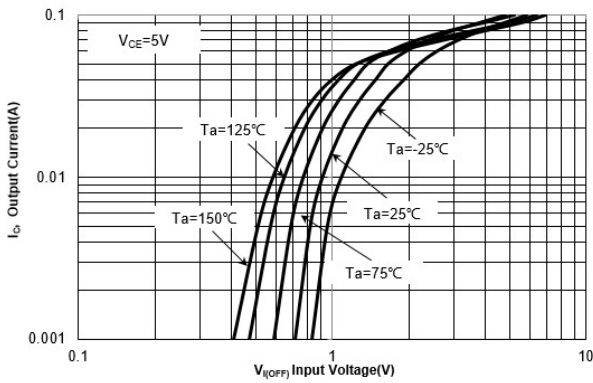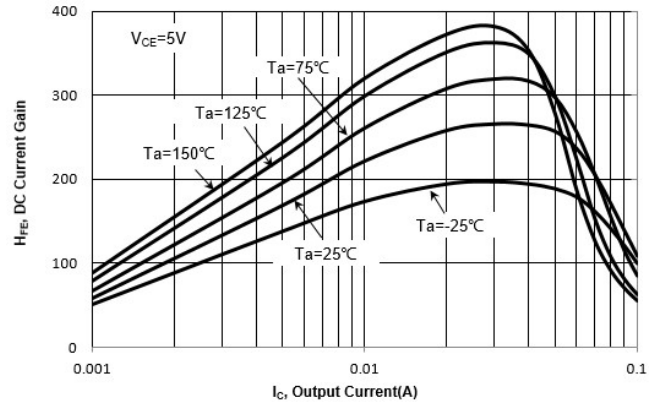Fig. 3 Output Current vs. $V_{I(OFF)}$ Input Voltage

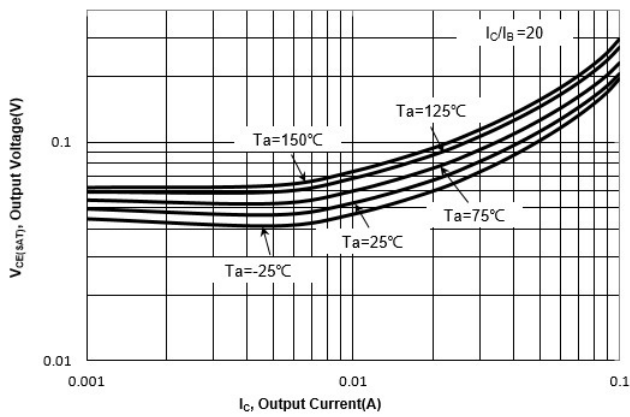Fig. 4 h_{FE},DC Current Gain vs. Output Current
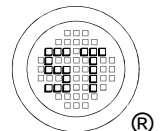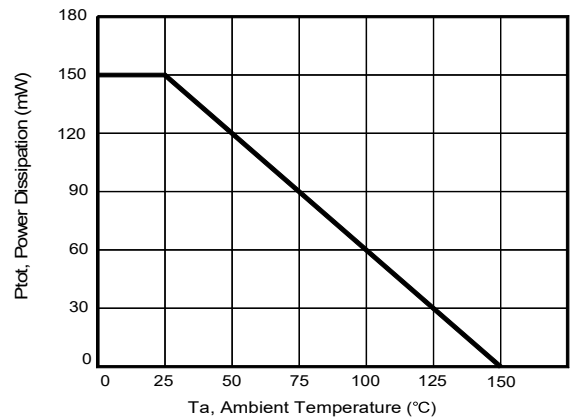

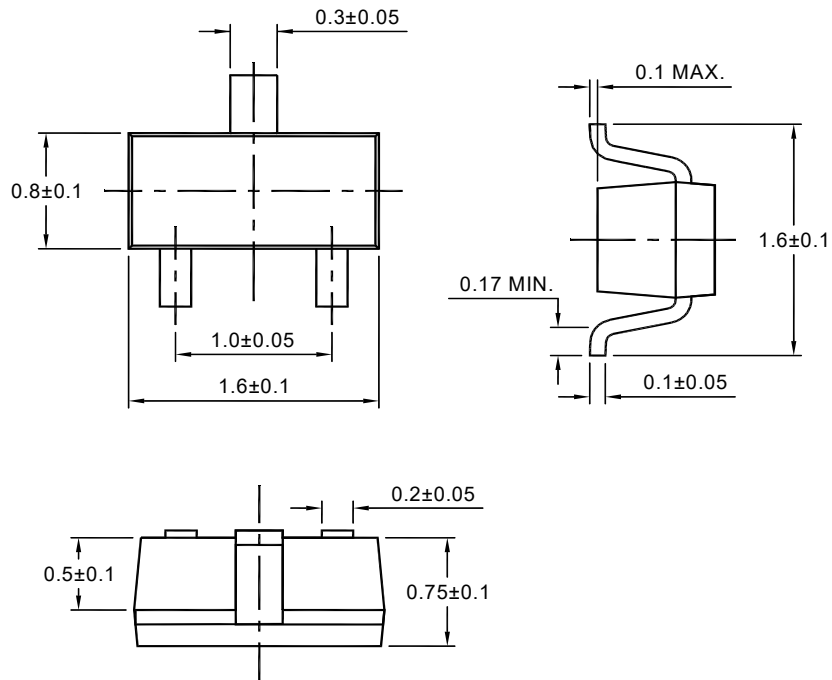Fig. 5 $V_{CE(sat)}$ vs. Output Current
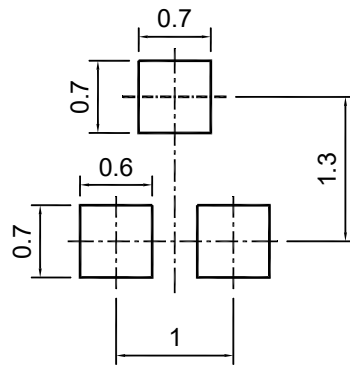

Fig. 6 Power Derating Curve

MMDTC143ZE

Package Outline (Dimensions in mm)

SOT-523

Recommended Soldering Footprint

Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-523	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

" RN " = Part No.

" YM " = Date Code Marking

" Y " = Year

" M " = Month

Font type: Arial

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RN1303(TE85L,F) RN1306(TE85L,F) EMH15T2R SMUN2214T3G SMUN5335DW1T1G NSBC143ZPDP6T5G NSVDTA143ZET1G
SMUN2214T1G FMA7AT148 DTC114EUA-TP SMUN5237DW1T1G SMUN5213DW1T1G SMUN5114DW1T1G SMUN2111T1G
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SMUN5335DW1T2G SMUN5216DW1T1G NSVMUN5316DW1T1G NSVMUN5215DW1T1G NSVMUN5213DW1T3G
NSVMUN2112T1G NSVIMD10AMT1G NSVEMC2DXV5T1G NSVDTC144WET1G NSVDTC123JET1G NSVDTA143EM3T5G
NSVB1706DMW5T1G NSBC143EDP6T5G RN2101,LF(CT NSBA144WDXV6T1G DTA115TET1G NSBC115TDP6T5G