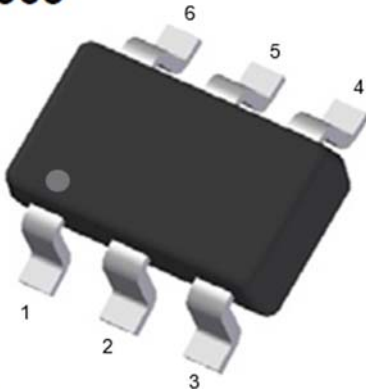


## Dual NPN+PNP Small Signal Transistor

### SOT-363



- 1、 Emitter.
- 2、 base.
- 3、 collector
- 4、 Emitter
- 5、 base
- 6、 collector

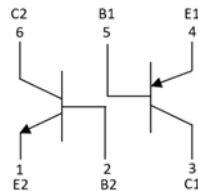
### Features

- Epoxy meets UL-94 V-0 flammability rating
- Surface mount package ideally Suited for Automatic Insertion
- Moisture Sensitivity Level 1
- Part no. with suffix "Q" means AEC-Q101 qualified

### Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** K27

### Equivalent circuit



### ■TR1 PNP Pin3、 4、 5 Maximum Ratings (Ta=25°C Unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	VALUE
Collector-Base Voltage	$V_{CBO}$	V	$I_C = -10\mu A, I_E = 0$	-60
Collector-Emitter Voltage	$V_{CEO}$	V	$I_C = -10mA, I_B = 0$	-60
Emitter-Base Voltage	$V_{EBO}$	V	$I_E = -10\mu A, I_C = 0$	-5
Collector Current	$I_C$	mA		-600
Collector Power Dissipation	$P_C$	mW		200
Junction Temperature	$T_j$	°C		-55 to +150
Storage Temperature	$T_{stg}$	°C		-55 to +150

### ■TR2 NPN Pin1、 2、 6 Maximum Ratings (Ta=25°C Unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	VALUE
Collector-Base Voltage	$V_{CBO}$	V	$I_C = 10\mu A, I_E = 0$	75
Collector-Emitter Voltage	$V_{CEO}$	V	$I_C = 10mA, I_B = 0$	40
Emitter-Base Voltage	$V_{EBO}$	V	$I_E = 10\mu A, I_C = 0$	6
Collector Current	$I_C$	mA		600
Collector Power Dissipation	$P_C$	mW		200
Junction Temperature	$T_j$	°C		-55 to +150
Storage Temperature	$T_{stg}$	°C		-55 to +150



# MMDT2227Q

## ■TR1 PNP Pin3、4、5 Electrical Characteristics (Ta=25°C unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	MIN.	TYP.	MAX.
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C = -10\mu A, I_E = 0$	-60		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C = -10mA, I_B = 0$	-60		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E = -10\mu A, I_C = 0$	-5		
Collector-Base cut-off current	$I_{CBO}$	nA	$V_{CB} = -50V, I_E = 0$			-10
Collector cut-off current	$I_{CEX}$	nA	$V_{CE} = -30V, V_{EB(off)} = -0.5V$			-50
Emitter-Base Cut-off current	$I_{EBO}$	nA	$V_{EB} = -5V, I_C = 0$			-10
DC current gain	$h_{FE1}$		$V_{CE} = -10V, I_C = -0.1mA$	75		
	$h_{FE2}$		$V_{CE} = -10V, I_C = -1mA$	100		
	$h_{FE3}$		$V_{CE} = -10V, I_C = -10mA$	100		
	$h_{FE4}$		$V_{CE} = -10V, I_C = -150mA$	100		300
	$h_{FE5}$		$V_{CE} = -10V, I_C = -500mA$	50		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C = -150mA, I_B = -15mA$			-0.4
			$I_C = -500mA, I_B = -50mA$			-1.6
Baser-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C = -150mA, I_B = -15mA$			-1.3
			$I_C = -500mA, I_B = -50mA$			-2.6
Transition frequency	$f_T$	MHz	$V_{CE} = -20V, I_C = -50mA, f = 100MHz$	200		
Delay time	$t_d$	ns	$V_{CC} = -30V, I_C = -150mA, I_{B1} = -15mA$			10
Rise time	$t_r$	ns				40
Storage time	$t_s$	ns	$V_{CC} = -6V, I_C = -150mA, I_{B1} = -I_{B2} = -15mA$			225
Fall time	$t_f$	ns				60



# MMDT2227Q

## ■TR2 NPN Pin1、2、6 Electrical Characteristics (Ta=25°C unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	MIN.	TYP.	MAX.
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C = 10\mu A, I_E = 0$	75		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C = 10mA, I_B = 0$	40		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E = 10\mu A, I_C = 0$	6		
Collector-Base cut-off current	$I_{CBO}$	nA	$V_{CB} = 60V, I_E = 0$			10
Collector cut-off current	$I_{CEX}$	nA	$V_{CE} = 60V, V_{EB(off)} = 3V$			10
Emitter-Base Cut-off current	$I_{EBO}$	nA	$V_{EB} = 3V, I_C = 0$			10
Base cut-off Current	$I_{BL}$	nA	$V_{CE} = 60V, V_{EB(off)} = 3V$			20
DC current gain	$h_{FE1}$		$V_{CE} = 10V, I_C = 0.1mA$	35		
	$h_{FE2}$		$V_{CE} = 10V, I_C = 1mA$	50		
	$h_{FE3}$		$V_{CE} = 10V, I_C = 10mA$	75		
	$h_{FE4}$		$V_{CE} = 10V, I_C = 150mA$	100		300
	$h_{FE5}$		$V_{CE} = 1V, I_C = 150mA$	35		
	$h_{FE6}$		$V_{CE} = 10V, I_C = 500mA$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C = 150mA, I_B = 15mA$			0.3
			$I_C = 500mA, I_B = 50mA$			1
Baser-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C = 150mA, I_B = 15mA$			1.2
			$I_C = 500mA, I_B = 50mA$			2
Transition frequency	$f_T$	MHz	$V_{CE} = 20V, I_C = 20mA,$ $f = 100MHz$	300		
Delay time	$t_d$	ns	$V_{CC} = 30V, I_C = 150mA,$ $I_{B1} = 15mA, V_{BE(off)} = -0.5V$			10
Rise time	$t_r$	ns				25
Storage time	$t_s$	ns	$V_{CC} = 30V, I_C = 150mA,$ $I_{B1} = I_{B2} = 5mA$			225
Fall time	$t_f$	ns				60

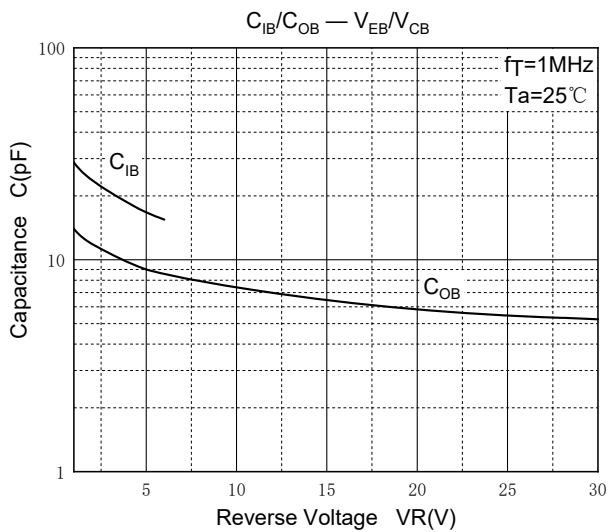
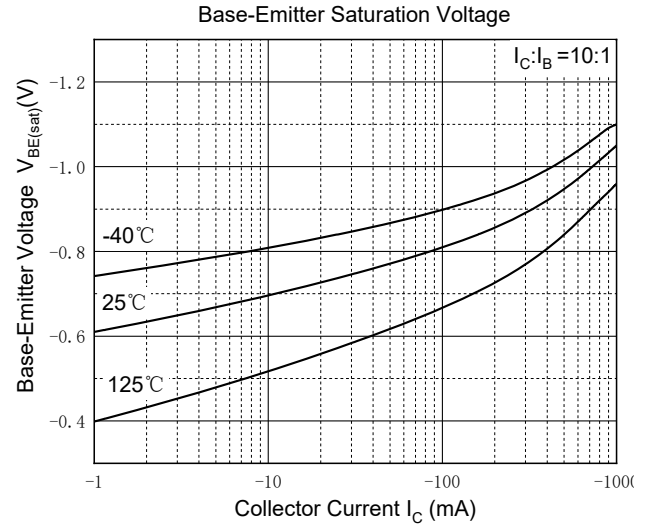
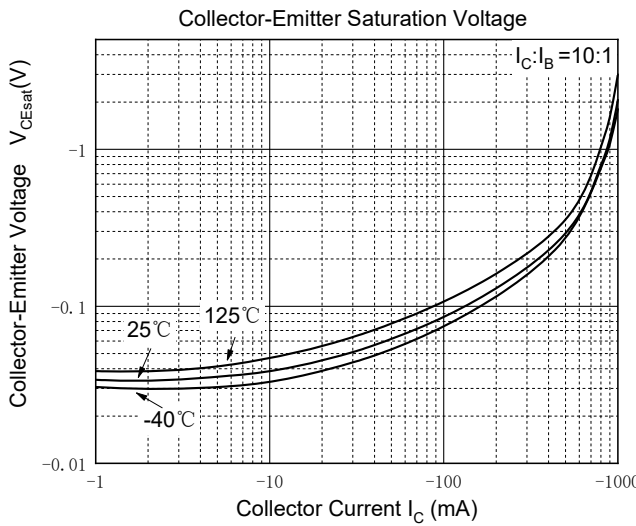
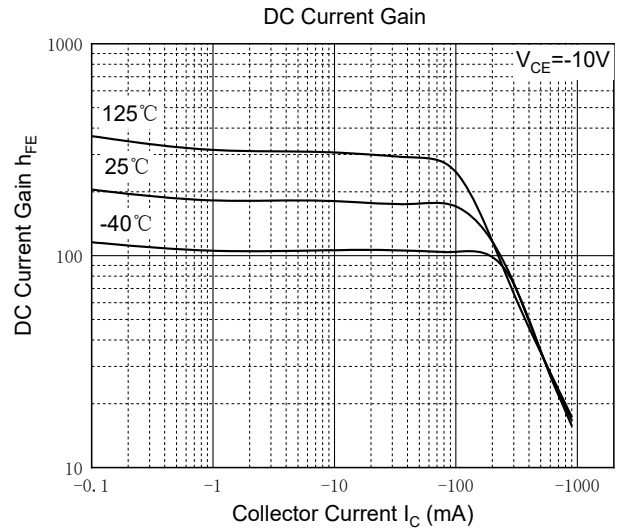
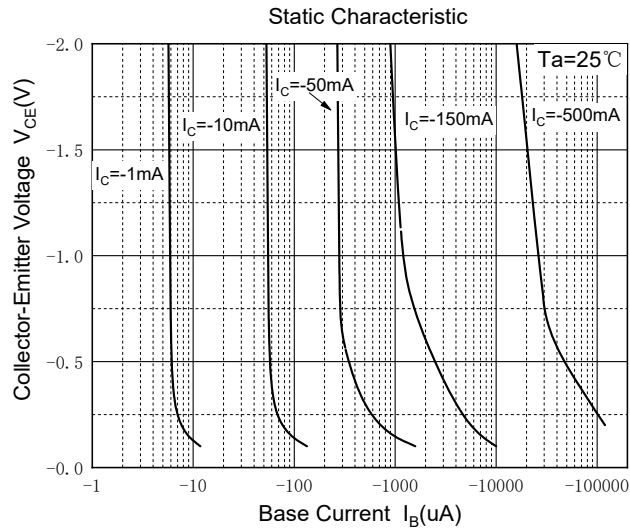
## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMDT2227Q	F2	Approximate 0.009g	3000	30000	120000	7" reel



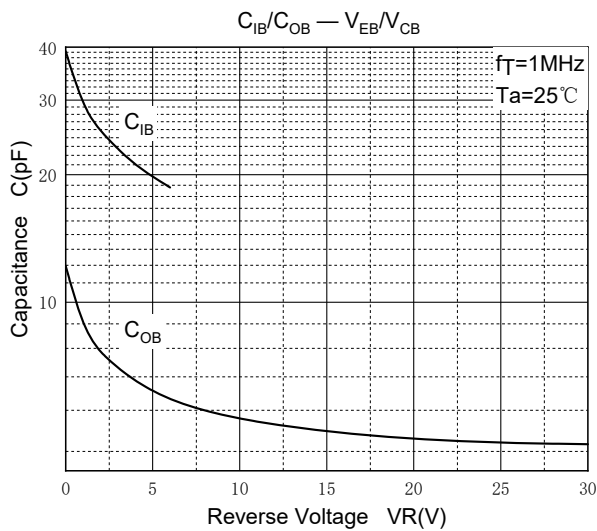
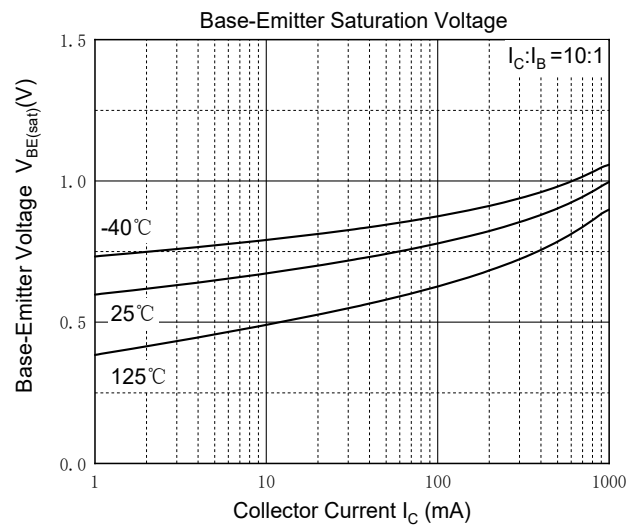
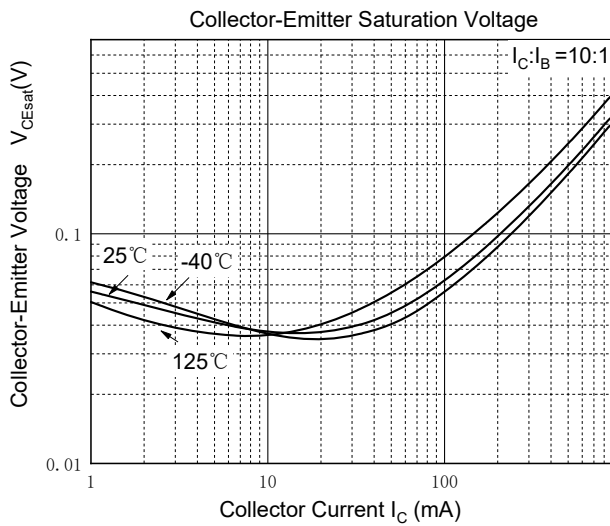
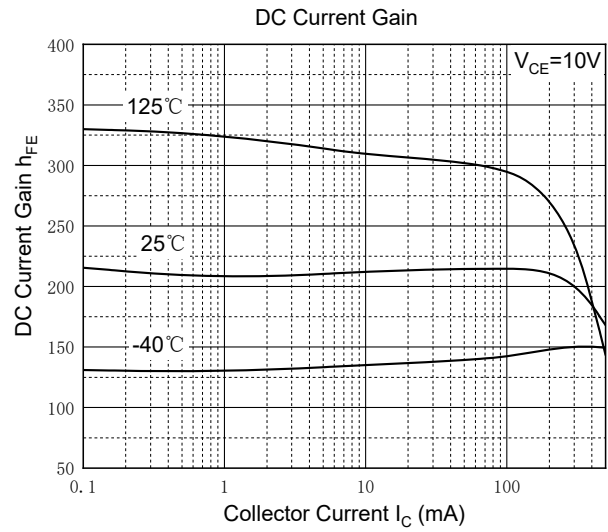
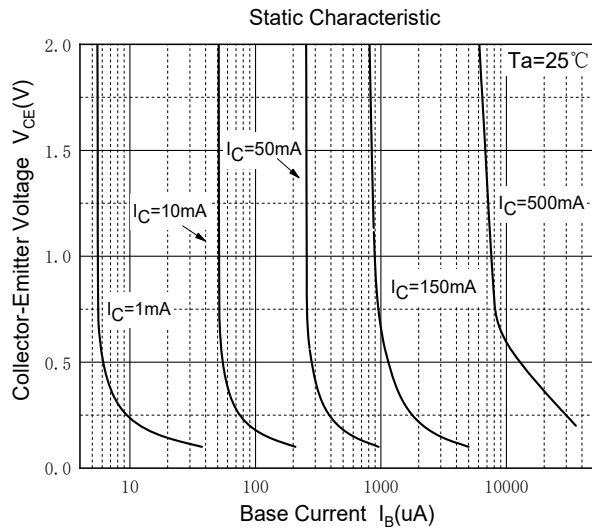
# MMDT2227Q

## ■ TR1 PNP Pin3、4、5 Characteristics (Typical)





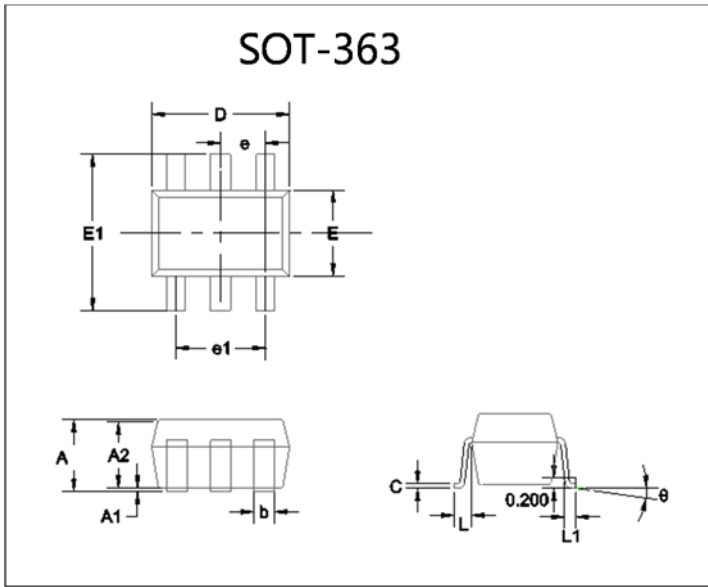
## ■ TR2 NPN Pin1、2、6 Characteristics (Typical)





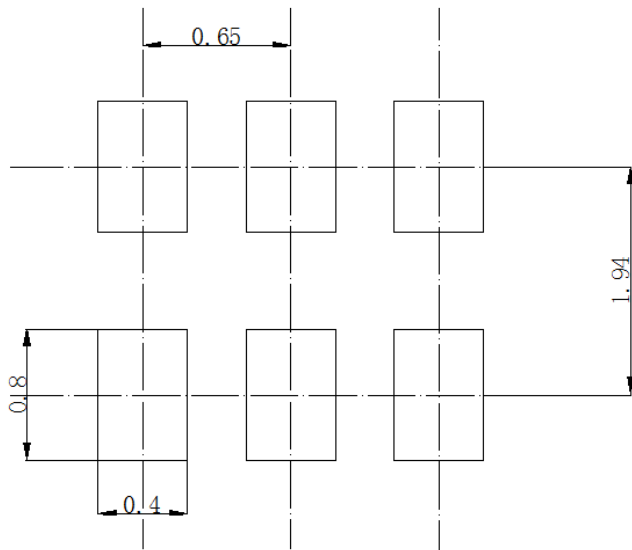
# MMDT2227Q

## ■SOT-363 Package Outline Dimensions



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.043	0.90	1.10	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.039	0.90	1.00	
b	0.006	0.014	0.15	0.35	
c	0.002	0.010	0.05	0.25	
D	0.071	0.087	1.80	2.20	
E	0.045	0.053	1.15	1.35	
E1	0.085	0.096	2.15	2.45	
e	0.026Typ		0.65Typ		
e1	0.047	0.055	1.20	1.40	
L	0.021Typ		0.525Typ		
L1	0.010	0.018	0.26	0.46	
theta	0°	8°	0°	8°	

## ■SOT-363 Soldering Footprint



Unit: mm



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