



## MMDT8050S

### NPN EPITAXIAL SILICON TRANSISTOR

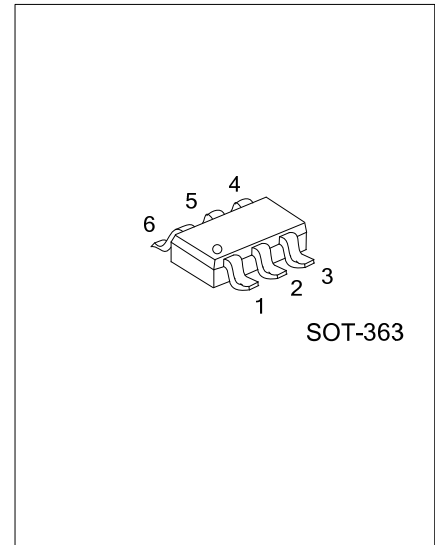
## LOW V<sub>CE(sat)</sub> NPN EPITAXIAL PLANAR TRANSISTOR

### DESCRIPTION

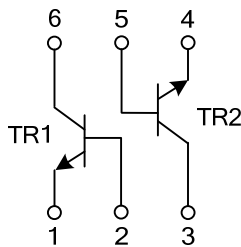
The UTC **MMDT8050S** is a Dual NPN epitaxial planar transistor. It has low  $V_{CE(sat)}$  performance, and the transistor elements are independent, eliminating interference.

### FEATURES

- \* Low  $V_{CE(sat)}$ ,  $V_{CE(sat)} = 40\text{mV (typ.) @ } I_C / I_B = 50\text{mA} / 2.5\text{mA}$
- \* Transistor elements are independent, eliminating interference.
- \* Mounting cost and area can be cut in half.



### EQUIVALENT CIRCUIT

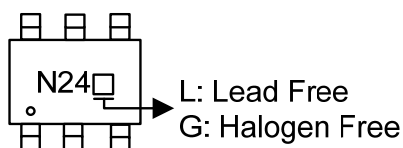


### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
MMDT8050SL-AL6-R	MMDT8050SG-AL6-R	SOT-363	E1	B1	C2	E2	B2	C1	Tape Reel

<p>MMDT8050SG-AL6-R</p> <ul style="list-style-type: none"><li>(1) Packing Type</li><li>(2) Package Type</li><li>(3) Green Package</li></ul>	<ul style="list-style-type: none"><li>(1) R: Tape Reel</li><li>(2) AL6: SOT-363</li><li>(3) G: Halogen Free and Lead Free, L: Lead Free</li></ul>
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### MARKING



# MMDT8050S

## NPN EPITAXIAL SILICON TRANSISTOR

### ■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	30	V
Collector-Emitter Voltage	$V_{CEO}$	20	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current (DC)	$I_C$	700	mA
Collector Current (Pulse)	$I_{CP}$	1.5 (Note 2)	A
Power Dissipation	$P_D$	200 (total)	mW
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Single pulse,  $P_W=10\text{ms}$

### ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 100\mu\text{A}$ , $I_E = 0$	30			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 1\text{mA}$ , $I_B = 0$	20			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 100\mu\text{A}$ , $I_C = 0$	5			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB} = 30\text{V}$ , $I_E = 0$			1	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB} = 5\text{V}$ , $I_C = 0$			100	nA
DC Current Gain(note)	$h_{FE1}$	$V_{CE} = 1\text{V}$ , $I_C = 1\text{mA}$	100			
	$h_{FE2}$	$V_{CE} = 1\text{V}$ , $I_C = 150\text{mA}$	120		400	
	$h_{FE3}$	$V_{CE} = 1\text{V}$ , $I_C = 500\text{mA}$	40			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 500\text{mA}$ , $I_B = 50\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 500\text{mA}$ , $I_B = 50\text{mA}$			1.2	V
Base Emitter On Voltage	$V_{BE(ON)}$	$V_{CE} = 1\text{V}$ , $I_C = 10\text{mA}$			1.0	V
Current Gain Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}$ , $I_C = 50\text{mA}$	100			MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$		9.0		pF

Note: Pulse Test: Pulse Width  $\leq 380\mu\text{s}$ , Duty Cycle  $\leq 2\%$

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