



MMDT5501

DUAL TRANSISTOR

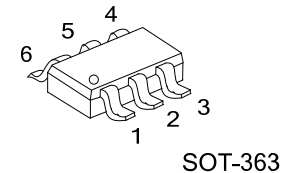
COMPLEMENTARY NPN/PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

DESCRIPTION

The UTC **MMDT5501** is a complementary NPN/PNP small signal surface mount transistor. It's suitable for low power amplification and switch, It is characterized with high breakdown voltage, high current gain and high switching speed.

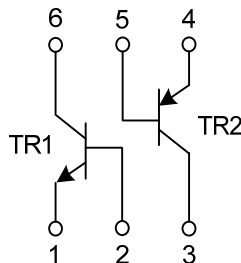
FEATURES

- * NPN MMBT5551 (NPN)
- PNP MMBT5401 (PNP)
- * High current gain
- * High collector current gain under high collector current condition
- * Epitaxial Planar Die Construction
- * Extremely-Small Surface Mount Package



SOT-363

EQUIVALENT CIRCUIT



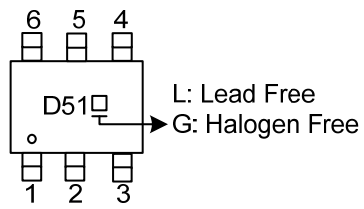
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
MMDT5501L-AL6-R	MMDT5501G-AL6-R	SOT-363	E1	B1	C2	E2	B2	C1	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

MMDT5501G-AL6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AL6: SOT-363
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS		UNIT
		TR1 (NPN)	TR2 (PNP)	
Collector -Base Voltage	V _{CBO}	180	-160	V
Collector -Emitter Voltage	V _{CEO}	160	-160	V
Emitter -Base Voltage	V _{EBO}	6	-5	V
DC Collector Current	I _C	600	-600	mA
Power Dissipation	P _D	200		mW
Junction Temperature	T _J	+150		°C
Storage Temperature	T _{STG}	-40 ~ +150		°C

Note 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.

■ ELECTRICAL SPECIFICATIONS (T_A = 25°C, unless otherwise specified)

TR1 (NPN)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V _{CBO}	I _C =100μA, I _E =0	180			V
Collector-Emitter Breakdown Voltage	V _{CEO}	I _C =1mA, I _B =0	160			V
Emitter-Base Breakdown Voltage	V _{EBO}	I _E =10μA, I _C =0	6			V
Collector Cut-OFF Current	I _{CBO}	V _{CB} =120V, I _E =0			50	nA
Emitter Cut-OFF Current	I _{EBO}	V _{BE} =4V, I _C =0			50	nA
DC Current Gain(note)	h _{FE}	V _{CE} =5V, I _C =1mA	100			
		V _{CE} =5V, I _C =10mA	120		270	
		V _{CE} =5V, I _C =50mA	40			
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =10mA, I _B =1mA			0.15	V
		I _C =50mA, I _B =5mA			0.2	V
Base-Emitter Saturation Voltage	V _{BE(SAT)}	I _C =10mA, I _B =1mA			0.9	V
		I _C =50mA, I _B =5mA			1	V
Current Gain Bandwidth Product	f _T	V _{CE} =10V, I _C =10mA, f=100MHz	100			MHz
Output Capacitance	C _{OB}	V _{CB} =10V, I _E =0, f=1MHz			6.0	pF

Note: Pulse test: P_w ≤ 300μs, Duty Cycle ≤ 2%.

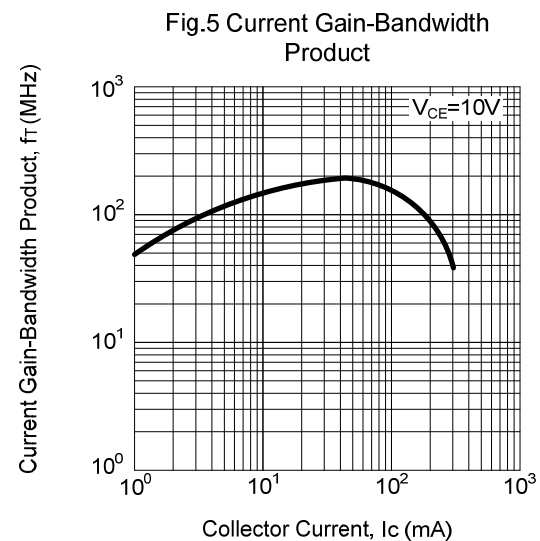
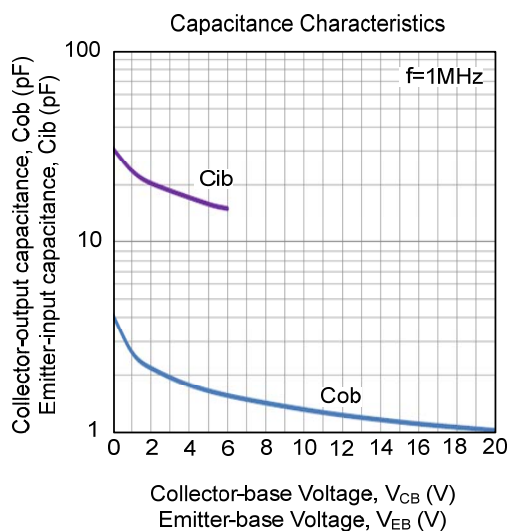
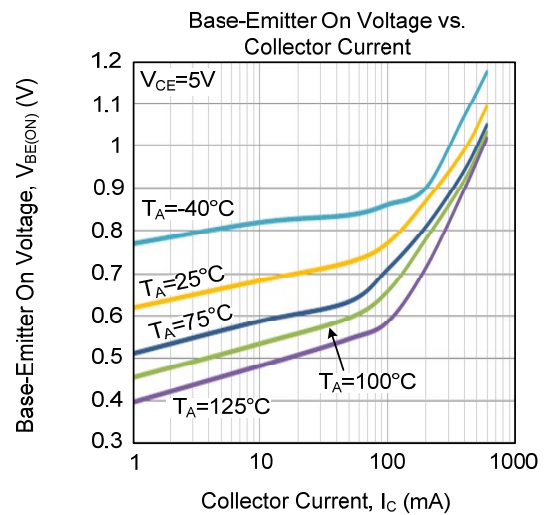
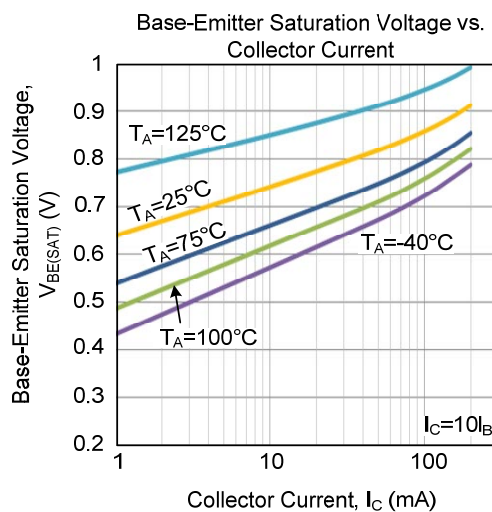
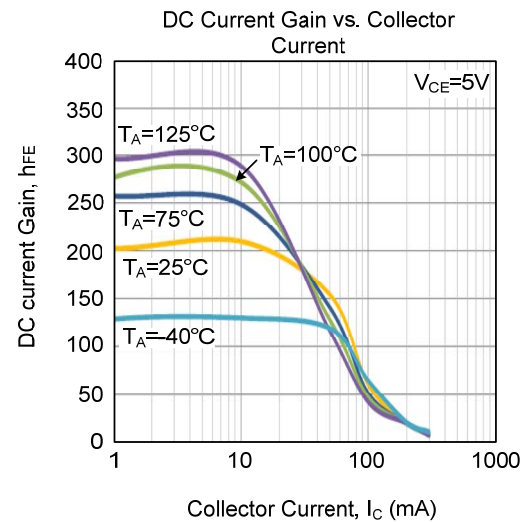
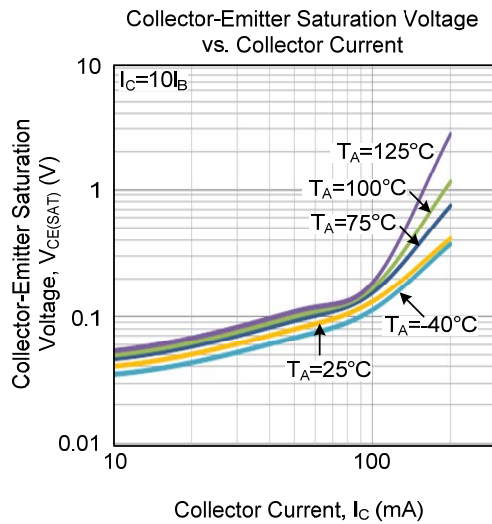
TR2 (PNP)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV _{CBO}	I _C =-100μA, I _E =0	-160			V
Collector-Emitter Breakdown Voltage	BV _{CEO}	I _C =-1mA, I _B =0	-160			V
Emitter-Base Breakdown Voltage	BV _{EBO}	I _E =-10μA, I _C =0	-6			V
Collector Cut-OFF Current	I _{CBO}	V _{CB} =-160V, I _E =0			-50	nA
Emitter Cut-OFF Current	I _{EBO}	V _{BE} =-6V, I _C =0			-50	nA
DC Current Gain(Note)	h _{FE}	V _{CE} =-5V, I _C =-1mA	90			
		V _{CE} =-5V, I _C =-10mA	120		270	
		V _{CE} =-5V, I _C =-50mA	40			
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =-10mA, I _B =-1mA			-0.2	V
		I _C =-50mA, I _B =-5mA			-0.3	V
Base-Emitter Saturation Voltage	V _{BE(SAT)}	I _C =-10mA, I _B =-1mA			-0.9	V
		I _C =-50mA, I _B =-5mA			-1	V
Current Gain Bandwidth Product	f _T	V _{CE} =-10V, I _C =-10mA, f=100MHz	100			MHz
Output Capacitance	C _{OB}	V _{CB} =-10V, I _E =0, f=1MHz			6.0	pF

Note: Pulse test: P_w ≤ 300μs, Duty Cycle ≤ 2%.

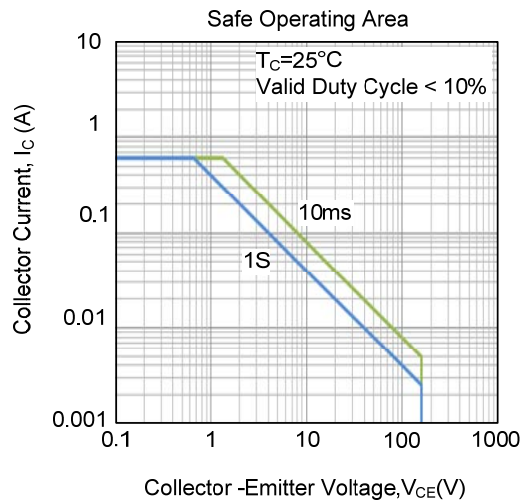
■ TYPICAL CHARACTERISTICS

NPN

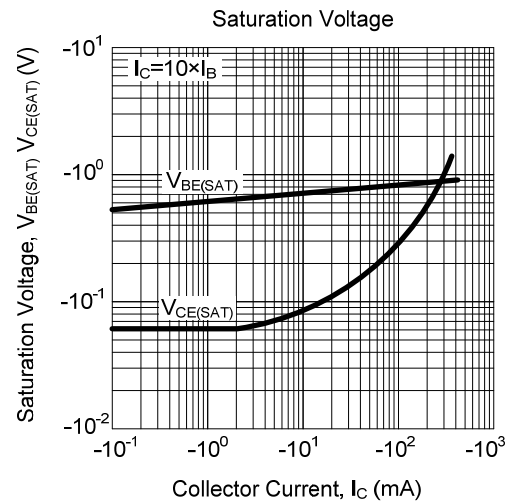
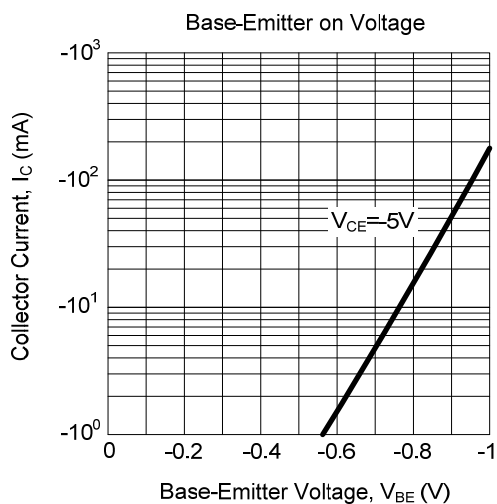
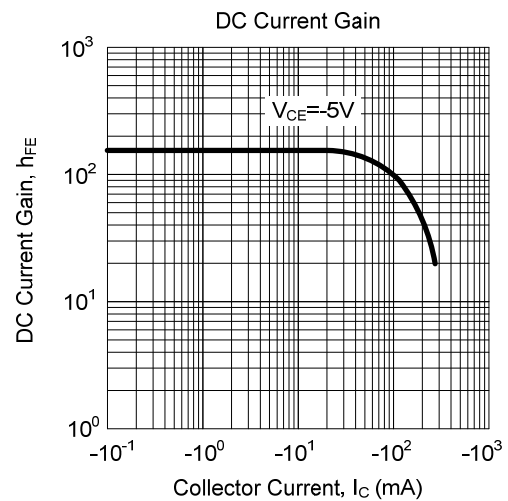
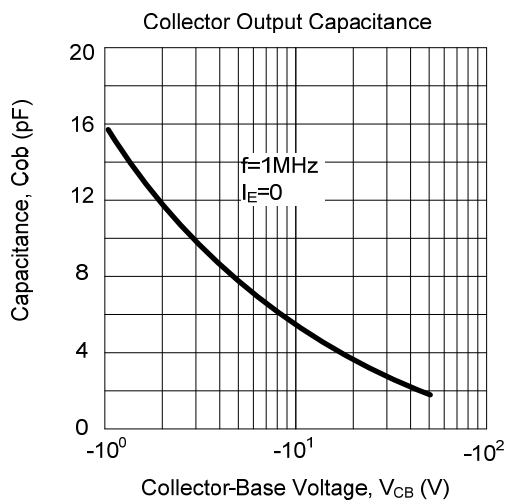


■ TYPICAL CHARACTERISTICS (Cont.)

NPN

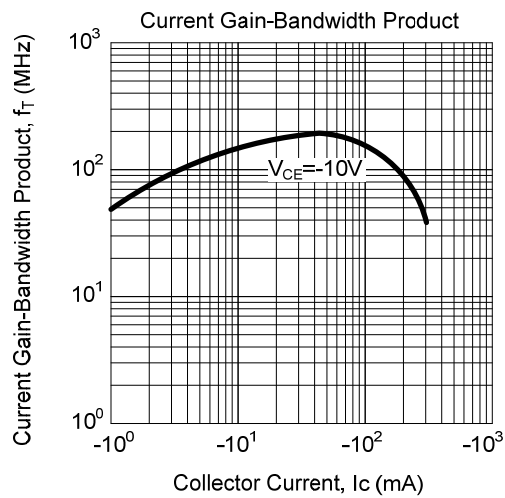


PNP



■ TYPICAL CHARACTERISTICS (Cont.)

PNP



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