

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MMDT2227DW-MS

Product specification

DUAL TRANSISTOR (NPN+PNP)

FEATURE

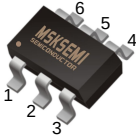
Epitaxial planar die construction

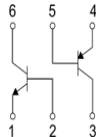
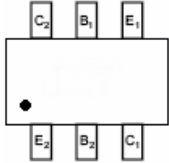
One 2222A NPN

One 2907A PNP

Ideal for power amplification and switching

Reference News

SOT-363	Marking
	

PIN Configuration	
	

NPN 2222A MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V _{CBO}	Collector-Base Voltage	75	V
V _{CEO}	Collector-Emitter Voltage	40	V
V _{EB0}	Emitter-Base Voltage	6	V
I _c	Collector Current -Continuous	600	mA
P _c	Collector Power Dissipation	200	mW
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = 10μA, I _E =0	75		V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = 10mA, I _B =0	40		V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =10μA, I _C =0	6		V
Collector cut-off current	I _{CBO}	V _{CB} = 60V, I _E =0		10	nA
Collector cut-off current	I _{CEX}	V _{CE} = 60V, V _{EB(off)} =3V		10	nA
Emitter cut-off current	I _{EBO}	V _{EB} = 3 V, I _C =0		10	nA
DC current gain	h _{FE(1)} *	V _{CE} = 10V, I _C = 0.1mA	35		
	h _{FE(2)} *	V _{CE} =10V, I _C = 1mA	50		
	h _{FE(3)} *	V _{CE} = 10V, I _C = 10mA	75		
	h _{FE(4)} *	V _{CE} = 10V, I _C = 150mA	100	300	
	h _{FE(5)} *	V _{CE} =10V, I _C = 500mA	40		
	h _{FE(6)} *	V _{CE} =1V, I _C = 150mA	35		
Collector-emitter saturation voltage	V _{CE(sat)1} *	I _C = 150mA, I _B = 15mA		0.3	V
	V _{CE(sat)2} *	I _C =500mA, I _B = 50mA		1	V
Base-emitter saturation voltage	V _{BE(sat)1} *	I _C = 150mA, I _B =15mA	0.6	1.2	V
	V _{BE(sat)2} *	I _C =500mA, I _B = 50mA		2	V
Transition frequency	f _T	V _{CE} =20V, I _C = 20mA, f=100MHz	300		MHz
Output Capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz		8	pF
Input Capacitance	C _{ib}	V _{EB} =0.5V, I _C =0, f=1MHz		25	pF
Noise Figure	NF	V _{CE} = 10V, I _C = 100μA, f=1KHz, R _s =1KΩ		4	dB

*pulse test

Switching characteristics

Parameter	Symbol	Test conditions	Min	Max	Unit
Delay time	t _d	V _{CC} =30V, I _C =150mA, V _{BE(off)} =0.5V, I _{B1} =15mA		10	ns
Rise time	t _r			25	ns
Storage time	t _s			225	ns
Fall time	t _f			60	ns

PNP 2907A MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

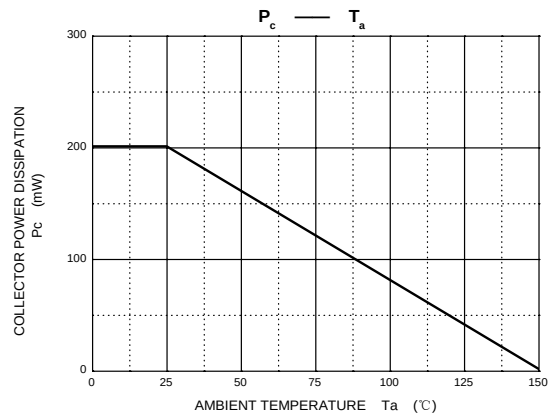
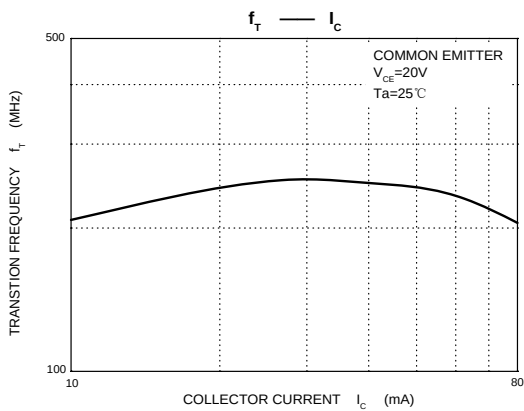
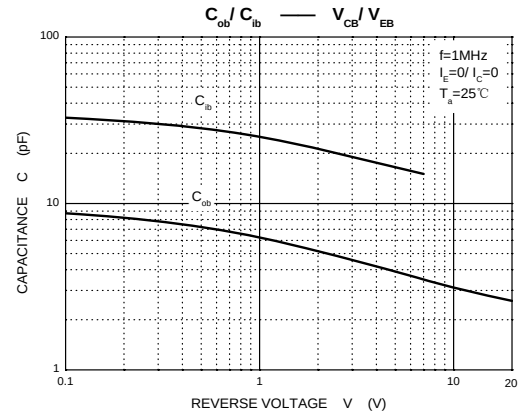
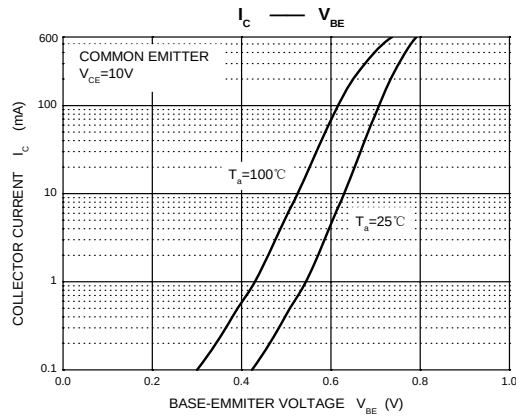
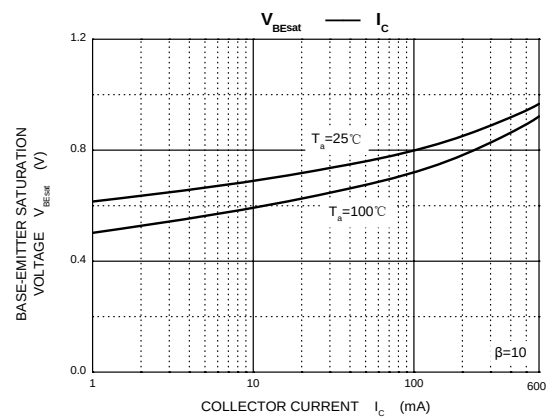
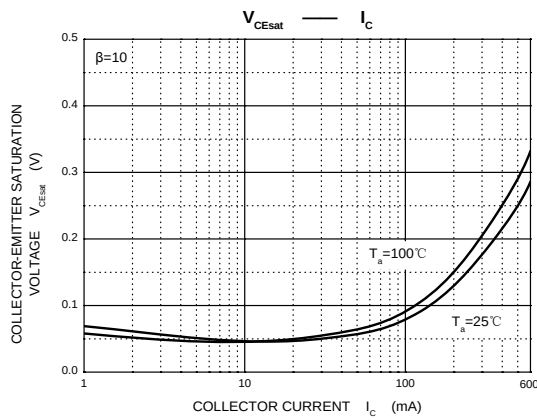
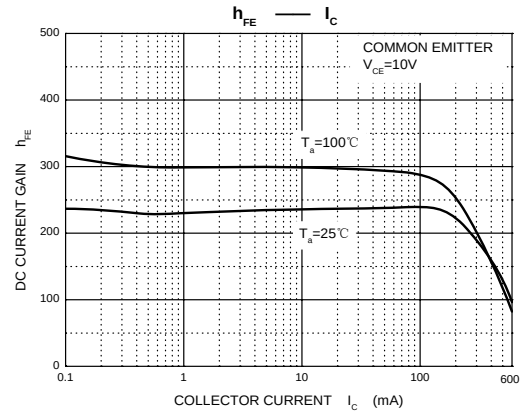
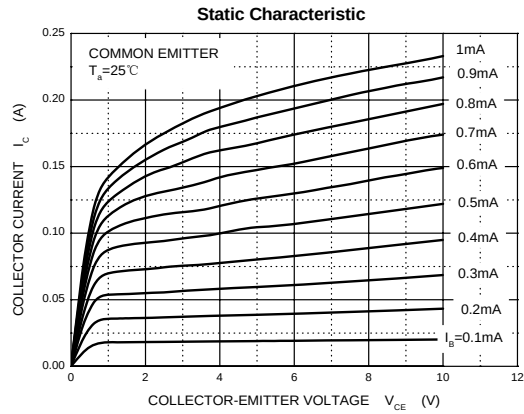
Symbol	Parameter	Value	Units
V _{CBO}	Collector-Base Voltage	-60	V
V _{CEO}	Collector-Emitter Voltage	-60	V
V _{EBO}	Emitter-Base Voltage	-5	V
I _C	Collector Current -Continuous	-600	mA
P _C	Collector Power Dissipation	200	mW
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

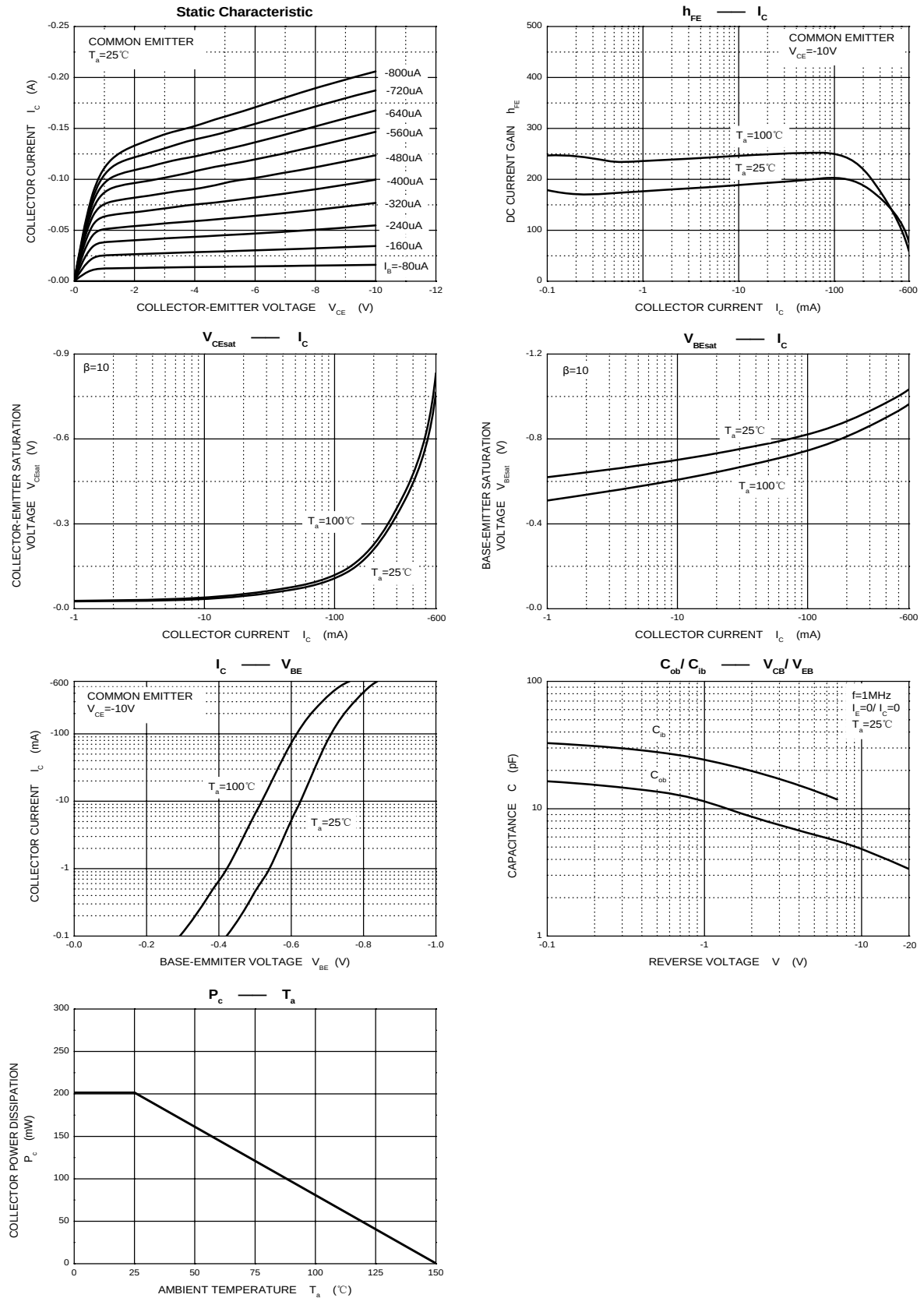
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = -10μA, I _E =0	-60		V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = -10mA, I _B =0	-60		V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =-10μA, I _C =0	-5		V
Collector cut-off current	I _{CBO}	V _{CB} =-50V, I _E =0		-10	nA
Collector cut-off current	I _{CEX}	V _{CE} =-30V, V _{EB(off)} =-0.5V		-50	nA
Emitter cut-off current	I _{EBO}	V _{EB} =-3V, I _C =0		-10	nA
DC current gain	h _{FE(1)} *	V _{CE} =-10V, I _C = -0.1mA	75		
	h _{FE(2)} *	V _{CE} =-10V, I _C = -1mA	100		
	h _{FE(3)} *	V _{CE} =-10V, I _C =-10mA	100		
	h _{FE(4)} *	V _{CE} =-10V, I _C = -150mA	100	300	
	h _{FE(5)} *	V _{CE} =-10V, I _C =-500mA	50		
Collector-emitter saturation voltage	V _{CE(sat)1} *	I _C =-150mA, I _B =-15mA		-0.4	V
	V _{CE(sat)2} *	I _C =-500mA, I _B =- 50mA		-1.6	V
Base-emitter saturation voltage	V _{BE(sat)1} *	I _C =-150mA, I _B =-15mA		-1.3	V
	V _{BE(sat)2} *	I _C =-500mA, I _B = -50mA		-2.6	V
Transition frequency	f _T	V _{CE} =-20V, I _C = -50mA, f=100MHz	200		MHz
Output Capacitance	C _{ob}	V _{CB} =-10V, I _E = 0, f=1MHz		8	pF
Input Capacitance	C _{ib}	V _{EB} =-2V, I _C = 0, f=1MHz		30	pF
Delay time	t _d	V _{CC} =-30V, I _C =-150mA, I _{B1} =-15mA		10	ns
Rise time	t _r			40	ns
Storage time	t _s			225	ns
Fall time	t _f			60	ns

*pulse test

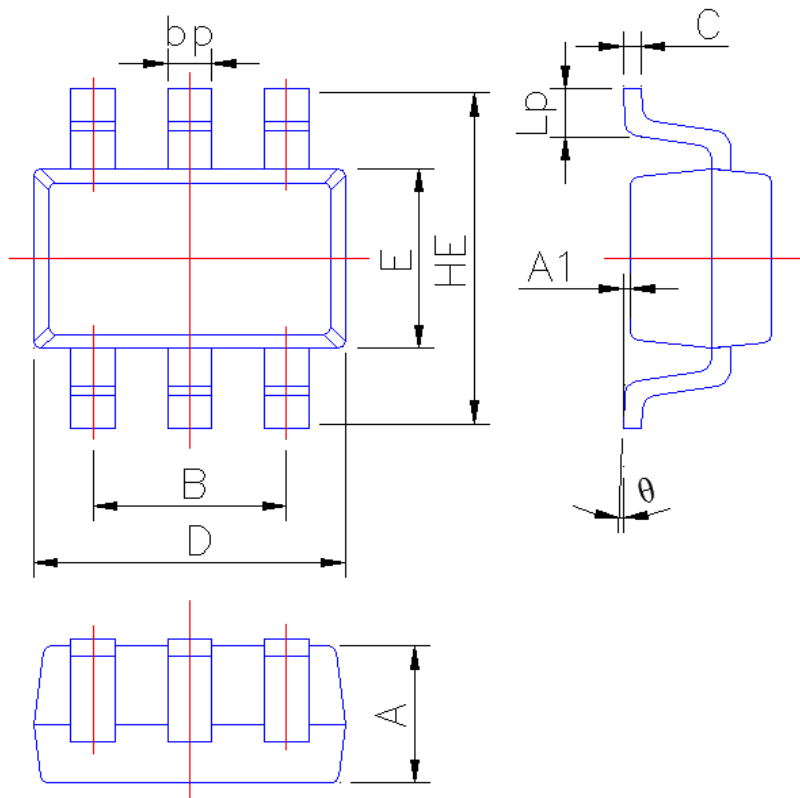
Typical Characteristics



Typical Characteristics



PACKAGE MECHANICAL DATA



SOT-363

Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.00
A1	0.010	0.100
B	1.20	1.40
bp	0.25	0.45
C	0.09	0.15
D	2.00	2.20
E	1.15	1.35
HE	2.15	2.55
Lp	0.25	0.46
θ	0°	6°

REELSPECIFICATION

P/N	PKG	QTY
MMDT2227DW-MS	SOT-363	3000

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