

New Jersey Semi-Conductor Products, Inc.

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MPS6601
MPS6602
NPN

MPS6651
MPS652
PNP

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage MPS6601/6651 MPS6602/6652	V _{CEO}	25 40	V _{dc}
Collector-Base Voltage MPS6601/6651 MPS6602/6652	V _{CBO}	25 30	V _{dc}
Emitter-Base Voltage	V _{EBO}	4.0	V _{dc}
Collector Current — Continuous	I _C	1000	mA _{dc}
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	625 5.0	mW mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.5 12	Watts mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150	°C

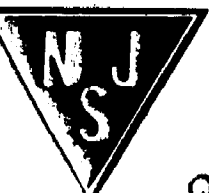
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THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	83.3	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA} (1)	200	°C/W

(1) R_{θJA} is measured with the device soldered into a typical printed circuit board.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mAdc}$, $I_B = 0$)	MPS6601/6651 MPS6602/6652	$V_{(BR)CEO}$	25 40	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	MPS6601/6651 MPS6602/6652	$V_{(BR)CBO}$	25 40	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_C = 0$)		$V_{(BR)EBO}$	4.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 25 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 30 \text{ Vdc}$, $I_B = 0$)	MPS6601/6651 MPS6602/6652	I_{CEO}	— —	0.1 0.1	μAdc
Collector Cutoff Current ($V_{CB} = 25 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 30 \text{ Vdc}$, $I_E = 0$)	MPS6601/6651 MPS6602/6652	I_{CBO}	— —	0.1 0.1	μAdc
ON CHARACTERISTICS					
DC Current Gain ($I_C = 100 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 1000 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)		h_{FE}	50 50 30	— — —	—
Collector-Emitter Saturation Voltage ($I_C = 1000 \text{ mAdc}$, $I_B = 100 \text{ mAdc}$)		$V_{CE(sat)}$	—	0.6	Vdc
Base-Emitter On Voltage ($I_C = 500 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)		$V_{BE(on)}$	—	1.2	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product ($I_C = 50 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 30 \text{ MHz}$)		f_T	100	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 100 \text{ kHz}$)		C_{obo}	—	30	pF
SWITCHING CHARACTERISTICS					
Delay Time	(V _{CC} = 40 Vdc, I _C = 500 mAdc, I _{B1} = 50 mAdc, t _p ≥ 300 ns Duty Cycle)	t_d	—	25	ns
Rise Time		t_r	—	30	ns
Storage Time		t_s	—	250	ns
Fall Time		t_f	—	50	ns