

MP4507

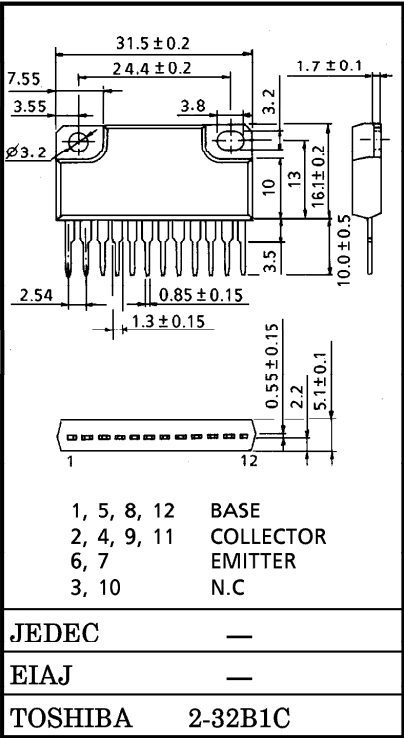
HIGH POWER SWITCHING APPLICATIONS.
HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE.
LOAD SWITCHING

- Package with Heat Sink Isolated to Lead (SIP 12 Pin)
- High Collector Power Dissipation (4 Devices Operation)
: $P_T=5W$ ($T_a=25^{\circ}C$)
- High Collector Current : I_C (DC) = $\pm 5A$ (Max.)
- High DC Current Gain : $h_{FE}=1000$ (Min.)
($V_{CE}=\pm 3V$, $I_C=\pm 3A$)

MAXIMUM RATINGS ($T_a=25^{\circ}C$)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			NPN	PNP	
Collector-Base Voltage		V _{CBO}	100	−100	V
Collector-Emitter Voltage		V _{CEO}	100	−100	V
Emitter-Base Voltage		V _{EBO}	5	−5	V
Collector Current	DC	I _C	5	−5	A
	Pulse	I _{CP}	8	−8	
Continuous Base Current		I _B	0.1	−0.1	A
Collector Power Dissipation (1 Device Operation)		P _C	3.0		W
Collector Power Dissipation (4 Devices Operation)	T _a = 25°C	P _C	5.0		W
	T _c = 25°C		25		
Isolation Voltage		V _{Isol}	1000		V
Junction Temperature		T _j	150		°C
Storage Temperature Range		T _{stg}	−55~150		°C

INDUSTRIAL APPLICATIONS
Unit in mm

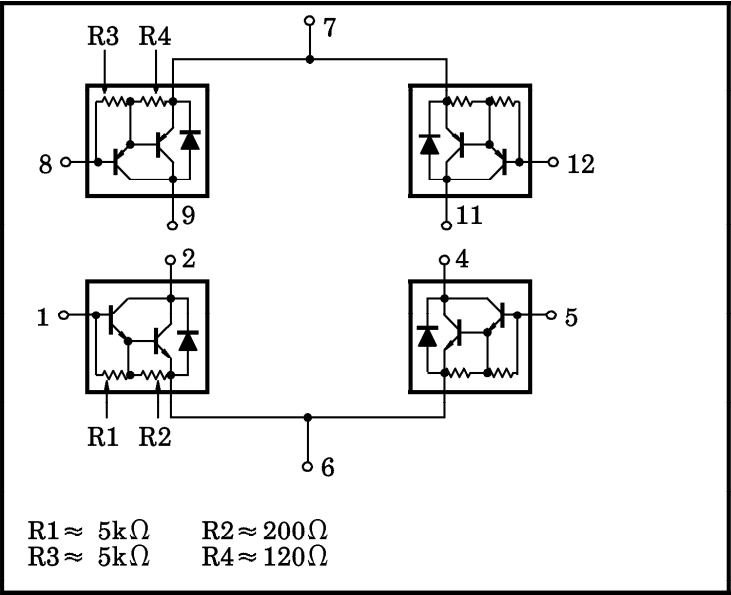


Weight : 6.0g

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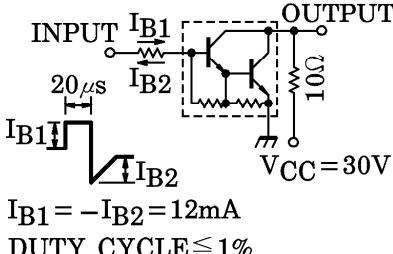
ARRAY CONFIGURATION



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Channel to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th(j-a)}$	25	°C / W
Thermal Resistance of Channel to Case (4 Devices Operation, Tc=25°C)	$\Sigma R_{th(j-c)}$	5.0	°C / W
Maximum Lead Temperature for Soldering Purposes (3.2mm from Case for 10s)	T _L	260	°C

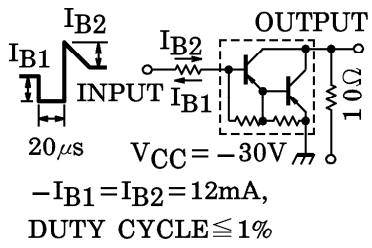
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$) (NPN TRANSISTOR)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 100\text{V}$, $I_E = 0$	—	—	10	μA
Collector Cut-off Current		I_{CEO}	$V_{CE} = 100\text{V}$, $I_B = 0$	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 5\text{V}$, $I_C = 0$	0.3	—	2.0	mA
Collector-Base Breakdown Voltage		$V_{(BR) CBO}$	$I_C = 1\text{mA}$, $I_E = 0$	100	—	—	V
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 30\text{mA}$, $I_B = 0$	100	—	—	V
DC Current Gain		$h_{FE} (1)$	$V_{CE} = 3\text{V}$, $I_C = 0.5\text{A}$	1000	—	—	
		$h_{FE} (2)$	$V_{CE} = 3\text{V}$, $I_C = 3\text{A}$	1000	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	$I_C = 3\text{A}$, $I_B = 12\text{mA}$	—	—	2.0	V
	Base-Emitter	$V_{BE(sat)}$	$I_C = 3\text{A}$, $I_B = 12\text{mA}$	—	—	2.5	
Transition Frequency		f_T	$V_{CE} = 3\text{V}$, $I_C = 0.5\text{A}$	3	—	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = 50\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	—	40	—	pF
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2} = 12\text{mA}$ DUTY CYCLE $\leq 1\%$	—	0.5	—	μs
	Storage Time	t_{stg}		—	3.0	—	
	Fall Time	t_f		—	2.0	—	

EMITTER-COLLECTOR DIODE RATINGS AND CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Current	I_{FM}	—	—	—	5	A
Surge Current	I_{FSM}	$t = 1\text{s}$, 1 shot	—	—	8	A
Forward Voltage	V_F	$I_F = 1\text{A}$, $I_B = 0$	—	—	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 5\text{A}$, $V_{BE} = -3\text{V}$,	—	1.0	—	μs
Reverse Recovery Charge	Q_{rr}	$dI_F / dt = -50\text{A} / \mu\text{s}$	—	8	—	μC

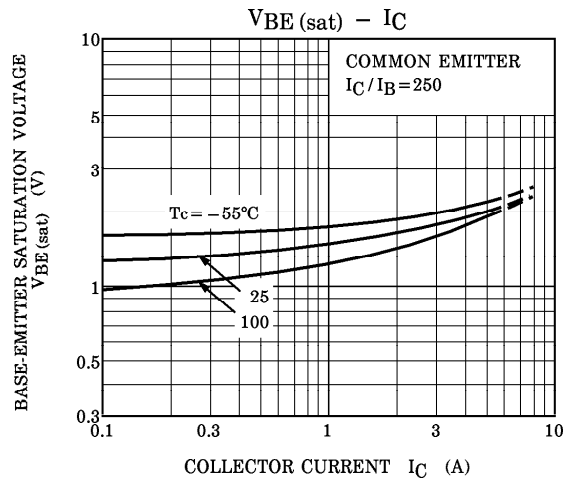
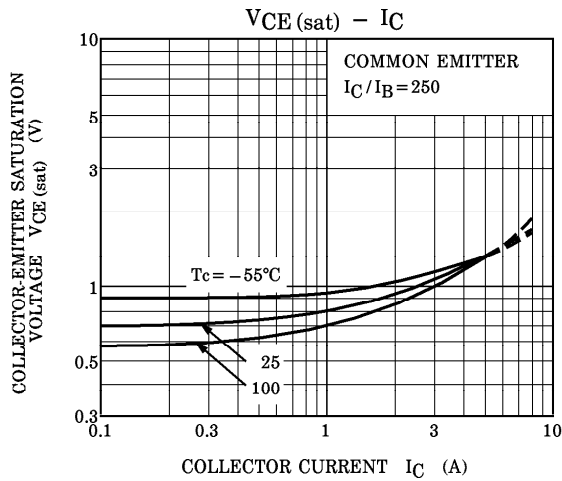
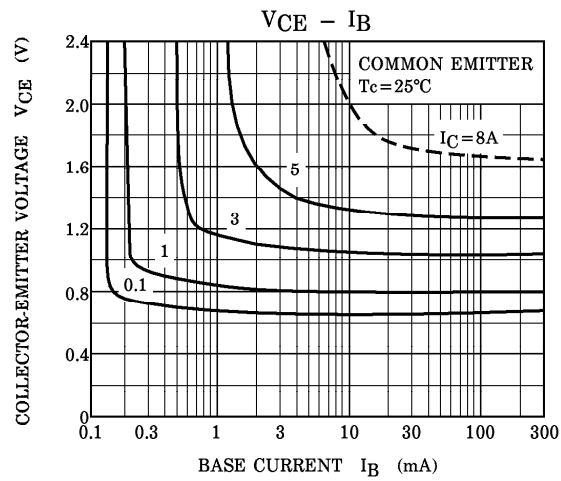
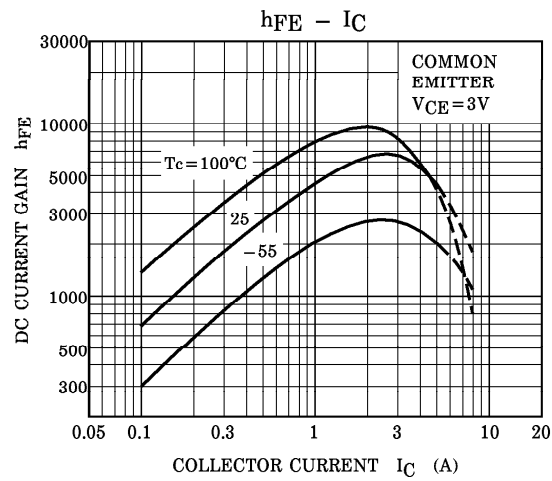
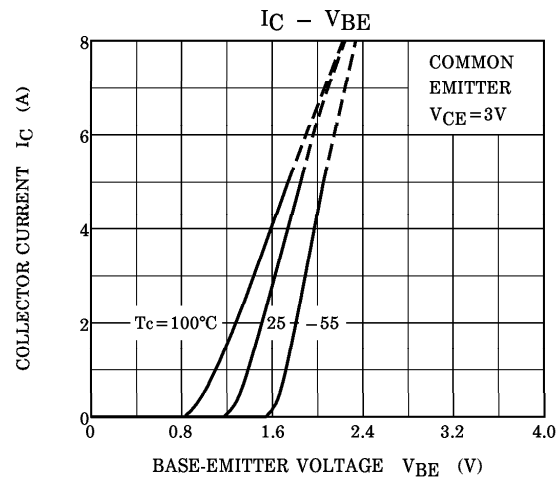
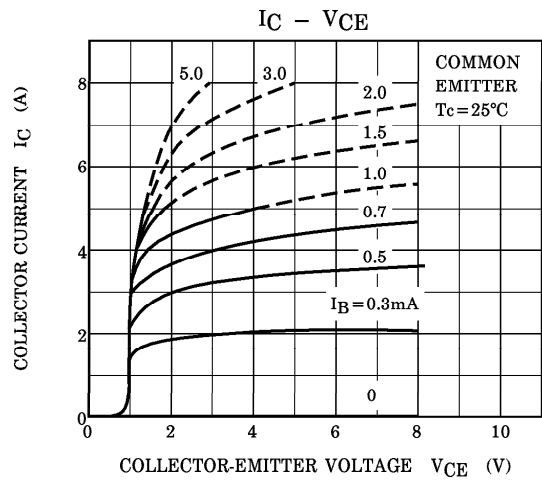
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$) (PNP TRANSISTOR)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = -100\text{V}$, $I_E = 0$	—	—	-10	μA
Collector Cut-off Current		I_{CEO}	$V_{CE} = -100\text{V}$, $I_B = 0$	—	—	-10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$	-0.3	—	-2.0	mA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C = -1\text{mA}$, $I_E = 0$	-100	—	—	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -30\text{mA}$, $I_B = 0$	-100	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = -3\text{V}$, $I_C = -0.5\text{A}$	1000	—	—	
		$h_{FE(2)}$	$V_{CE} = -3\text{V}$, $I_C = -3\text{A}$	1000	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	$I_C = -3\text{A}$, $I_B = -12\text{mA}$	—	—	-2.0	V
	Base-Emitter	$V_{BE(sat)}$	$I_C = -3\text{A}$, $I_B = -12\text{mA}$	—	—	-2.5	
Transition Frequency		f_T	$V_{CE} = -3\text{V}$, $I_C = -0.5\text{A}$	3	—	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = -50\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	—	40	—	pF
Switching Time	Turn-on Time	t_{on}	 $-I_{B1} = I_{B2} = 12\text{mA}$, DUTY CYCLE $\leq 1\%$	—	0.5	—	μs
	Storage Time	t_{stg}		—	3.0	—	
	Fall Time	t_f		—	2.0	—	

EMITTER-COLLECTOR DIODE RATINGS AND CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Current	I_{FM}	—	—	—	5	A
Surge Current	I_{FSM}	$t = 1\text{s}$, 1 shot	—	—	8	A
Forward Voltage	V_F	$I_F = 1\text{A}$, $I_B = 0$	—	—	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 5\text{A}$, $V_{BE} = 3\text{V}$,	—	1.0	—	μs
Reverse Recovery Charge	Q_{rr}	$dI_F / dt = -50\text{A} / \mu\text{s}$	—	8	—	μC

(NPN TRANSISTOR)



(PNP TRANSISTOR)

