

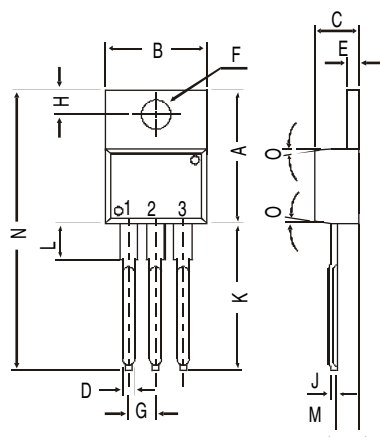
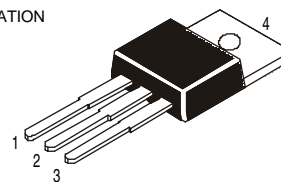
## TO-220 Plastic Package

**2N6486, 2N6487, 2N6488**  
**2N6489, 2N6490, 2N6491**

2N6486, 6487, 6488 NPN PLASTIC POWER TRANSISTORS  
2N6489, 6490, 6491 PNP PLASTIC POWER TRANSISTORS  
General Purpose Amplifier and Switching Applications

### PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



DIM	MIN.	MAX.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O	DEG 7	

All dimensions in mm.

### ABSOLUTE MAXIMUM RATINGS

		6486	6487	6488	
		6489	6490	6491	
Collector-base voltage (open emitter)	$V_{CBO}$ max.	50	70	90	V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	40	60	80	V
Collector current	$I_C$ max.		15		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$ max.		75		W
Junction temperature	$T_j$ max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage	$V_{CEsat}$ max.		1.3		V
$I_C = 5\text{ A}; I_B = 0.5\text{ A}$					
D.C. current gain	$h_{FE}$ min.		20		
$I_C = 5\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}$ max.		150		

### RATINGS (at $T_A=25^\circ\text{C}$ unless otherwise specified)

#### Limiting values

		6486	6487	6488	
		6489	6490	6491	
Collector-base voltage (open emitter)	$V_{CBO}$ max.	50	70	90	V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	40	60	80	V
Emitter-base voltage (open collector)	$V_{EBO}$ max.		5.0		V

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Collector current	$I_C$	max.	15	A
Base current	$I_B$	max.	5.0	A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	75	W
Derate above $25^\circ\text{C}$		max.	0.6	$\text{W}^\circ\text{C}$
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	1.8	W
Derate above $25^\circ\text{C}$		max.	0.014	$\text{W}^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-65 to +150	$^\circ\text{C}$

**THERMAL RESISTANCE**

From junction to ambient	$R_{th\ j-a}$	70	$^\circ\text{C/W}$
From junction to case	$R_{th\ j-c}$	1.67	$^\circ\text{C/W}$

**CHARACTERISTICS**

$T_{amb} = 25^\circ\text{C}$  unless otherwise specified

**6486 6487 6488  
6489 6490 6491**

Collector cutoff current					
$I_B = 0; V_{CE} = 20\text{ V}$	$I_{CEO}$	max.	1.0	–	– mA
$I_B = 0; V_{CE} = 30\text{ V}$	$I_{CEO}$	max.	–	1.0	– mA
$I_B = 0; V_{CE} = 40\text{ V}$	$I_{CEO}$	max.	–	–	1.0 mA
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 45\text{ V}$	$I_{CEX}$	max.	500	–	– $\mu\text{A}$
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 65\text{ V}$	$I_{CEX}$	max.	–	500	– $\mu\text{A}$
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 85\text{ V}$	$I_{CEX}$	max.	–	–	500 $\mu\text{A}$
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 40\text{ V}; T_C = 150^\circ\text{C}$	$I_{CEX}$	max.	5.0	–	– mA
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 60\text{ V}; T_C = 150^\circ\text{C}$	$I_{CEX}$	max.	–	5.0	– mA
$V_{EB(off)} = 1.5\text{ V}; V_{CE} = 80\text{ V}; T_C = 150^\circ\text{C}$	$I_{CEX}$	max.	–	–	5.0 mA
Emitter cut-off current					
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$	max.	1.0		mA
Breakdown voltages					
$I_C = 200\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	40	60	80 V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CBO}$	min.	50	70	90 V
$I_C = 200\text{ mA}; V_{BE} = 1.5\text{ V}$	$V_{CEX(sus)}^*$	min.	50	70	90 V
$I_E = 1\text{ mA}; I_C = 0$	$V_{EBO}$	min.		5.0	V
Saturation voltages					
$I_C = 5\text{ A}; I_B = 0.5\text{ A}$	$V_{CEsat}^*$	max.	1.3		V
$I_C = 15\text{ A}; I_B = 5\text{ A}$	$V_{CEsat}^*$	max.	3.5		V
Base-emitter on voltage					
$I_C = 5\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.	1.3		V
$I_C = 15\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.	3.5		V
D.C. current gain					
$I_C = 5\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.	20		
		max.	150		
$I_C = 15\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.	5.0		
Transition frequency					
$I_C = 1\text{ A}; V_{CE} = 4\text{ V}; f = 1\text{ MHz}$	$f_T(1)$	min.	5.0		MHz
Small signal current gain					
$I_C = 1.0\text{ A}; V_{CE} = 4\text{ V}; f = 1.0\text{ KHz}$	$h_{fe}$	min.	25		

\* Pulse test: pulse width  $\leq 300\text{ }\mu\text{s}$ ; duty cycle  $\leq 2\%$

(1)  $f_T = |h_{fe}| \bullet f_{test}$

## Notes

### Disclaimer

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