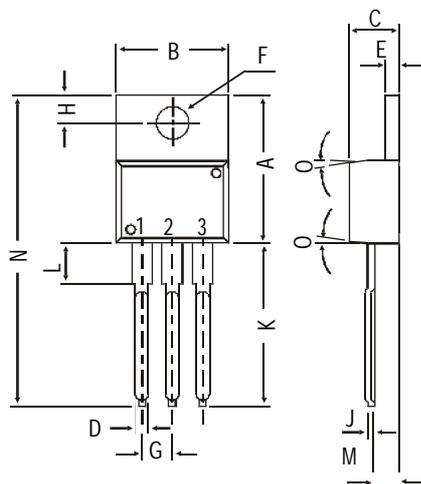
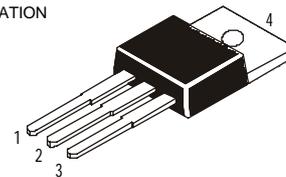


TO-220 Plastic Package

CSC2238, CSC2238A, CSC2238B

CSC2238, 2238A, 2238B NPN PLASTIC POWER TRANSISTORS
 Complementary 2SA968, 968A, 968B
 Power Amplifier and Driver Stage Amplifier 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

		2238	2238A	2238B	
Collector-base voltage (open emitter)	V_{CBO}	max. 160	180	200	V
Collector-emitter voltage (open base)	V_{CEO}	max. 160	180	200	V
Collector current	I_C	max.	1.5		A
Total power dissipation up to $T_C = 25^\circ C$	P_{tot}	max.	25		W
Junction temperature	T_j	max.	150		$^\circ C$
Collector-emitter saturation voltage					
$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	V_{CEsat}	max.	1.5		V
D.C. current gain					
$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE}	min	70		
		max.	240		

RATINGS (at $T_A=25^\circ C$ unless otherwise specified)

		2238	2238A	2238B	
Limiting values					
Collector-base voltage (open emitter)	V_{CBO}	max. 160	180	200	V
Collector-emitter voltage (open base)	V_{CEO}	max. 160	180	200	V
Emitter-base voltage (open collector)	V_{EBO}	max.	5.0		V
Collector current	I_C	max.	1.5		A

CSC2238, CSC2238A, CSC2238B

Emitter current	I_E	max.	-1.5	A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.	25	W
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

CHARACTERISTICS

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

			2238	2238A	2238B	
Collector cutoff current						
$I_E = 0; V_{CB} = 160$	I_{CBO}	max.		1.0		μA
Emitter cut-off current						
$I_C = 0; V_{EB} = 5\text{V}$	I_{EBO}	max.		1.0		μA
Breakdown voltages						
$I_C = 10\text{ mA}; I_B = 0$	V_{CEO}	min.	160	180	200	V
$I_C = 1\text{ mA}; I_E = 0$	V_{CBO}	min.	160	180	200	V
$I_E = 1\text{ mA}; I_C = 0$	V_{EBO}	min.		5.0		V
Saturation voltage						
$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	V_{CEsat}	max.		1.5		V
Base emitter on voltage						
$I_C = 500\text{ mA}; V_{CE} = 5\text{ V}$	$V_{BE(on)}$	max.		1.0		V
D.C. current gain						
$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}^{**}$	h_{FE}	min.		70		
		max.		240		
Output capacitance at $f = 1\text{ MHz}$						
$I_E = 0; V_{CB} = 10\text{ V}$	C_o	typ.		25		pF
Transition frequency						
$I_C = 100\text{ mA}; V_{CE} = 10\text{ V}$	f_T	typ.		100		MHz

**** h_{FE} classification: O: 70-140 Y: 120-240**

Customer Notes

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/ CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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