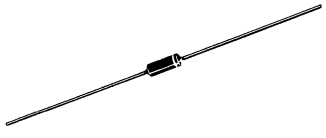
MOTOROLA

MCL1300 thru MCL1304

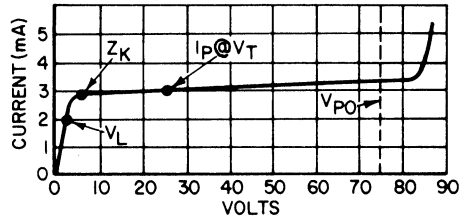
CURRENT LIMITING DIODES



CURRENT LIMITING DIODES

Field-effect current limiting diodes designed for applications requiring a current reference or a constant current over a specified voltage range.

CURRENT-LIMITER CHARACTERISTICS AND SYMBOL IDENTIFICATION
(See Notes 1 thru 6)



MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Junction and Storage Temperature: −65°C to +200°C
Peak Operating Voltage: See Table

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Type Number	Nominal Pinch-Off Current Note 1 I_P (mA)	Tol. (mA)	Test Volt. Note 2 V_T (Volts)	Limiter Imped. Note 3 Z_T (min) (Megohms)	Knee Imped. at 6 V Note 4 Z_K (min) (Megohms)	Limiting Voltage Note 5 V_L (max) (Volts)	Peak Operating Voltage Note 6 V_{PO} (Volts)
MCL1300	0.5	±0.3	25	4.000	0.500	1.0	75
MCL1301	1.0	±0.6	25	0.800	0.200	1.5	75
MCL1302	2.0	±0.6	25	0.400	0.100	2.0	75
MCL1303	3.0	±0.6	25	0.300	0.050	2.0	75
MCL1304	4.0	±0.6	25	0.250	0.025	2.5	75

These specifications are preliminary. Selections may be made to obtain nominal currents between those shown, as well as tighter tolerance units.

SYMBOL DEFINITIONS:

NOTE 1 I_P – The pinch-off current is the guaranteed current at a specified V_T. I_P is specified as a nominal with a tolerance.

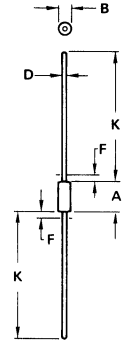
NOTE 2 V_T – The test voltage for measurement of I_P.

NOTE 3 Z_T – The impedance at the test voltage, V_T, specified. To provide the most constant current Z_T should be as high as possible; thus a minimum Z_T is specified. Z_T is derived from the 90 cycle per second current which results when an AC voltage having an RMS value equal to 10% of the test voltage (V_T) is superimposed on V_T.

NOTE 4 Z_K – Knee impedance is specified as a minimum also since again the highest value is desired. V_K is established as 6.0 V for convenience.

NOTE 5 V_L – Limiting Voltage. This specification is provided with Z_K to indicate the sharp knee of the device. The specification is analogous to I_R and Z_K of a zener diode. V_L a maximum specification is measured at 80% on I_P tolerance.

NOTE 6 V_{PO} – The peak-operating voltage is provided and indicates the maximum voltage to be applied to the device. The specification is necessary since the device is either power limited or breakdown limited beyond this specified voltage.



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	5.84	7.62	0.230	0.300
B	2.16	2.72	0.085	0.107
D	0.46	0.56	0.018	0.022
F	–	1.27	–	0.050
K	25.40	38.10	1.000	1.500

All JEDEC dimensions and notes apply

CASE 51
DO-7

NOTES:
1. PACKAGE CONTOUR OPTIONAL WITHIN DIA B AND LENGTH A. HEAT SLUGS, IF ANY, SHALL BE INCLUDED WITHIN THIS CYLINDER, BUT SHALL NOT BE SUBJECT TO THE MIN LIMIT OF DIA B.
2. LEAD DIA NOT CONTROLLED IN ZONES F, TO ALLOW FOR FLASH, LEAD FINISH BUILDUP, AND MINOR IRREGULARITIES OTHER THAN HEAT SLUGS.