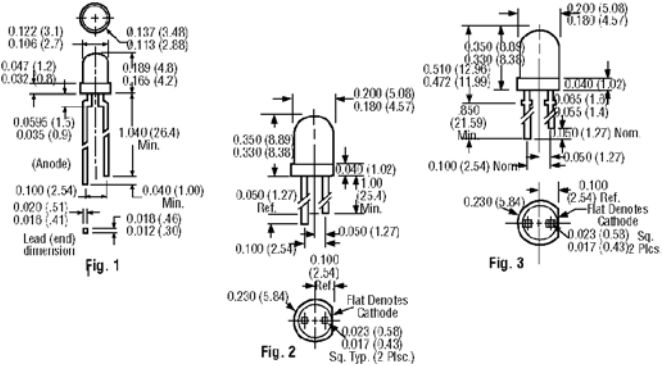


Low Current LED Lamps



T-100 Low Current Lamps — Fig. 1

Stock No.	Mfr.'s Type	Source Color	Wave Length λ_p (nm)	Lens Color	Typical Viewing Angle	Forward Voltage V_f (V)		Luminous Intensity I_v (mcd)		Notes*	EACH	
						Typ.	Max.	Min.	Typ.		1-99	100
990-1166	HLMP-K155	AlGaAs Red	660	Red Clear	45°	1.6	1.8	2.0	3.0	1	.30	.24
990-1046	HLMP-1700	HER	635	Red Diff.	50°	1.8	2.2	1.0	2.0	2	.18	.14
990-1048	HLMP-1719	Grn.	565	Grn. Diff.	50°	1.9	2.7	1.0	2.0	2	.18	.14
990-1050	HLMP-1790	Yell.	585	Yell. Diff.	50°	1.9	2.7	1.0	2.0	2	.18	.14

T-1¼ Low Current Lamps — Fig. 2

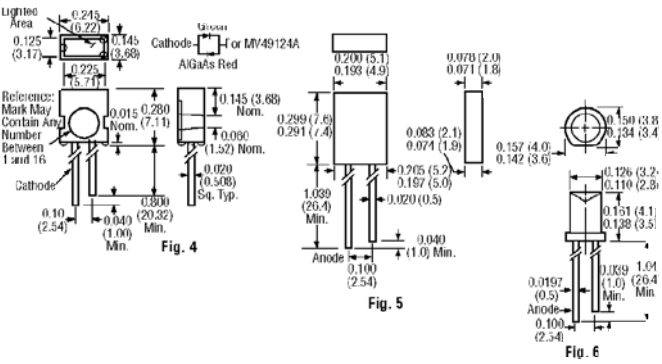
990-1098	HLMP-4700	HER	635	Red Diff.	35°	1.8	2.2	1.2	2.0	2	.15	.12
990-1106	HLMP-4719	Yell.	585	Yell. Diff.	35°	1.9	2.7	1.2	2.0	2	.18	.14
990-1114	HLMP-4740	Grn.	565	Grn. Diff.	35°	1.9	2.7	1.2	3.0	2	.18	.14
990-3000	MV2454	Grn.	565	Grn. Diff.	35°	1.9	2.7	1.2	3.0	2	.18	.14
990-1144	HLMP-D150A	AlGaAs Red	660	Red Diff.	65°	1.6	1.8	1.2	3.0	1	.35	.28

T-1¼ Low Current Lamps with Standoff — Fig. 3

990-1152	HLMP-D155A	AlGaAs Red	660	Red Clear	24°	1.6	1.8	3.0	10.0	1	.40	.32
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*1: V_f and I_v @ I_f = 1 mA. 2: V_f and I_v @ I_f = 2 mA.

Rectangular and Uniquely Shaped LED Lamps



0.220" × 0.125" Rectangular Lamps — Fig. 4

Stock No.	Mfr.'s Type	Source Color	Wave Length λ_p (nm)	Lens Color	Typical Viewing Angle	Forward Voltage V_f (V)		Luminous Intensity I_v (mcd)		Notes*	EACH	
						Typ.	Max.	Min.	Typ.		1-99	100
990-3120	MV57124A	HER	635	Red Diff.	100°	2.0	3.0	1.0	6.0	1	.24	.19
990-3088	MV54124A	Grn.	565	Grn. Diff.	100°	2.2	3.0	1.0	6.0	1	.24	.19
990-3062	MV53124A	Yell.	585	Yell. Diff.	100°	2.0	3.0	1.0	6.0	1	.25	.20
990-3020	MV49124A	AlGaAs Red/Grn.	660/565	White Diff.	100°	2.2	3.0	1.0	6.0	1	.68	.54

2 × 5 mm Rectangular Lamps — Fig. 5

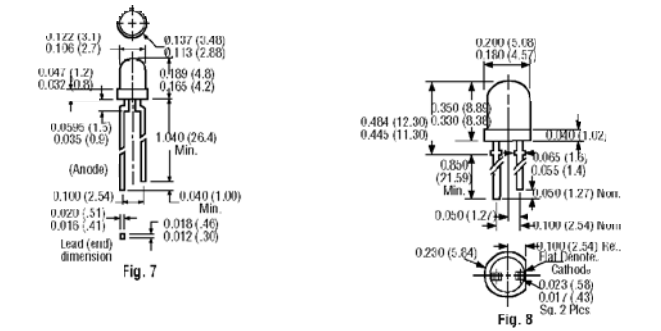
990-3118	MV57123	HER	635	Red Diff.	100°	2.0	3.0	1.0	4.0	1	.20	.16
990-3086	MV54123	Grn.	565	Grn. Diff.	100°	2.2	3.0	1.0	4.0	1	.20	.16
990-3060	MV53123	Yell.	585	Yell. Diff.	100°	2.1	3.0	1.0	4.0	1	.20	.16

T-100 Inverted Cone — Fig. 6

990-4050	QL484GT	Grn.	565	Grn. Clear	180°	2.1	2.8	0.6	1.2	2	.18	.14
990-4052	QL484HT	Bright Red	697	Red Clear	180°	2.0	2.8	0.3	0.6	2	.15	.12
990-4054	QL484IT	HER	635	Red Clear	180°	2.0	2.8	0.6	1.2	2	.15	.12
990-4056	QL484RT	Red	660	Red Clear	180°	1.7	2.0	0.3	0.5	2	.15	.12
990-4058	QL484YT	Yell.	585	Yell. Clear	180°	2.0	2.8	0.4	1.0	2	.18	.14

*1: V_f and I_v @ I_f = 20 mA. 2: V_f — @ I_f = 20 mA; I_v @ I_f = 10 mA.

Resistor LED Lamps



T-100 Integral Resistor Lamps — Fig. 7

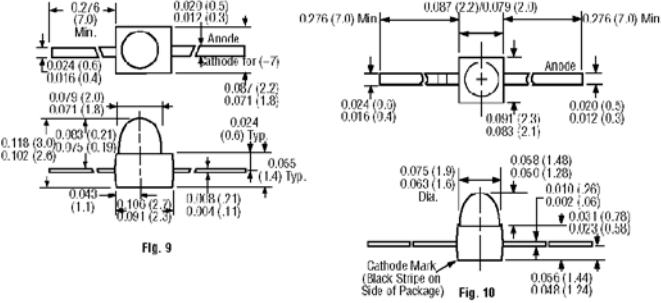
Stock No.	Mfr.'s Type	Source Color	Wave Length λ_p (nm)	Lens Color	Typical Viewing Angle	Forward Voltage V_f (V)		Luminous Intensity I_v (mcd)		Notes*	EACH	
						Typ.	Max.	Min.	Typ.		1-99	100
990-2068	MR5060	Red	660	Red Diff.	60°	13.0	20	0.8	1.5	1	.35	.28
990-2070	MR5360	Yell.	585	Yell. Diff.	60°	10.0	15	1.5	4.0	1	.40	.32
990-2072	MR5361	Yell.	585	Yell. Diff.	60°	13.0	20	1.5	4.0	2	.35	.28
990-2074	MR5460	Grn.	565	Grn. Diff.	60°	12.0	15	1.5	4.0	1	.35	.28
990-2076	MR5461	Grn.	565	Grn. Diff.	60°	13.0	20	1.5	4.0	2	.35	.28
990-2078	MR5660	Red	660	White Diff.	60°	13.0	20	0.8	1.5	1	.38	.30
990-2080	MR5760	HER	635	Red Diff.	60°	10.0	15	1.5	4.0	1	.35	.28
990-2082	MR5761	HER	635	Red Diff.	60°	13.0	20	1.5	4.0	2	.35	.28

T-1¼ Integral Resistor Lamps — Fig. 8

990-2000	MR3050	Red	660	Red Diff.	60	13.0	20	1.0	2.0	1	.30	.24
990-2006	MR3051	Red	660	Red Diff.	60	13.0	20	1.0	2.0	2	.30	.25
990-2014	MR3350	Yell.	585	Yell. Diff.	60	10.0	15	1.5	4.0	1	.30	.24
990-2024	MR3351	Yell.	585	Yell. Diff.	60	13.0	20	1.5	4.0	2	.30	.24
990-2032	MR3450	Grn.	565	Grn. Diff.	60	12.0	15	1.5	4.0	1	.30	.24
990-2042	MR3451	Grn.	565	Grn. Diff.	60	13.0	20	1.5	4.0	2	.31	.25
990-2050	MR3750	HER	635	Red Diff.	60	10.0	15	1.5	4.0	1	.30	.24
990-2060	MR3751	HER	585	Red Diff.	60	13.0	20	1.5	4.0	2	.30	.24

*1: I_f and I_v @ V_f = 5 V. 2: I_f and I_v @ V_f = 12 V.

Subminiature LED Lamps



T-¾ Square Base, Diffused and Clear with Offset Lens — Fig. 9

Stock No.	Mfr.'s Type	Source Color	Wave Length λ_p (nm)	Lens Color	Typical Viewing Angle	Forward Voltage V_f (V)		Luminous Intensity I_v (mcd)		Notes*	EACH	
						Typ.	Max.	Min.	Typ.		1-99	100
990-4564	QTLP912-2	HER	635	Water Clear	25	2.0	2.8	16.0	80.0	1	.23	.18
990-4582	QTLP913-2	HER	635	Red Diff.	50	2.0	2.8	16.0	80.0	1	.25	.20
990-4566	QTLP912-3	Yell.	585	Water Clear	25	2.0	2.8	18.0	30.0	1	.25	.20
990-4584	QTLP913-3	Yell.	585	Yell. Diff.	50	2.0	2.8	16.0	30.0	1	.28	.22
990-4568	QTLP912-4	Grn.	565	Water Clear	25	2.1	2.8	30.0	50.0	1	.23	.18
990-4586	QTLP913-4	Grn.	565	Grn. Diff.	50	2.1	2.8	11.5	50.0	1	.25	.20
990-4570	QTLP912-5	Pure Grn.	555	Water Clear	25	2.0	2.8	4.0	6.3	1	.25	.20
990-4588	QTLP913-5	Pure Grn.	555	Grn. Diff.	50	2.0	2.8	1.6	2.5	1	.28	.22
990-4572	QTLP912-7	AlGaAs Red	660	Water Clear	25	2.0	2.8	113.0	170.0	1	.35	.28
990-4590	QTLP913-7	AlGaAs Red	660	Red Diff.	50	1.7	2.4	72.0	108.0	1	.40	.32
990-4574	QTLP912-8	Orng.	610	Water Clear	25	2.0	2.8	6.3	10.0	1	.25	.20

T-¾ Square Base, Diff. — Fig. 10

990-3220	MV6700A	HER	635	Red Diff.	50	1.8	3.0	1.0	3.0	2	.30	.24
990-3194	MV6400A	Grn.	565	Grn. Diff.	40	2.0	3.0	1.0	3.0	2	.30	.24
990-3172	MV6300A	Yell.	585	Yell. Diff.	50	2.0	3.0	1.0	3.0	2	.30	.24
990-1210	HLMP-Q155A	AlGaAs Red	660	Red Diff.	50	1.6	1.8	2.0	4.0	3	.33	.26
990-1122	HLMP-6305A	HER	635	Water Clear	25	1.8	3.0	3.0	12.0	2	.30	.24
990-1126	HLMP-6505A	Grn.	565	Water Clear	25	2.0	3.0	3.0	12.0	2	.30	.24
990-1124	HLMP-6405A	Yell.	585	Water Clear	25	2.0	3.0	3.0	12.0	2	.30	.24
990-1204	HLMP-Q105A	AlGaAs Red	660	Water Clear	25	1.8	2.4	20.0	50.0	1	.33	.26
990-1202	HLMP-Q101A	AlGaAs Red	660	Red Diff.	50	1.8	2.4	22.0	45.0	1	.33	.26

*1: V_f and I_v @ I_f = 20 mA. 2: V_f and I_v @ I_f = 10 mA. 3: V_f and I_v @ I_f = 1 mA.