

OPTOELECTRONICS



Short Form Catalog 2010

Light Emitting Diodes

Featuring:

Ultra Bright LED Lamps in:

- Red: to 11,000 mcd typical
- Orange-Amber: to 11,750 mcd typical
- Yellow: to 9,750 mcd typical
- Green: to 5,000 mcd typical
- White: to 10,000 mcd typical
- Blue: to 1,500 mcd typical

**T-3, T-1 3/4, T-1,
Surface Mount Packages
Dual Color
Special Packages**

Contact Us for Segment Displays

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Red LED Lamps

Part Number	LED Color	Lens Color	λ Peak (nm)	Luminous Intensity, I_v (mcd)		$(I_F - mA)$	Total Angle (degree)	Material
				Min	Typ			
T-3 Package (10mm)								
AND190CRP	Red	Clear	660	6,000	11,000	20	8	GaAlAs
AND191CRP	Red	White Diffused	660	180	600	20	20	GaAlAs
AND190HRP	Red	Clear	644	5,600	10,000	20	8	InGaAlP
T-1 3/4 Package (5mm)								
AND113R	Red	Red, Clear	700	5	18	10	30	GaP
AND113RP	Red	Red, Clear	700	5	18	10	30	GaP
AND114R	Red	Red, Diffused	700	2	5	10	60	GaP
AND114RP	Red	Red, Diffused	700	2	5	10	60	GaP
AND180CRP	Red	Clear	660	2,000	3,600	20	10	GaAlAs
AND130CR	Red	Clear	660	1,200	2,000	20	16	GaAlAs
AND120CRP	Red	Clear	660	1,200	2,000	20	22	GaAlAs
AND120CR	Red	Clear	660	1,200	2000	20	22	GaAlAs
AND155CRP	Red	Clear	660	630	1,250	20	20	GaAlAs
AND120BR	Red	Clear	660	500	1,100	20	35	GaAlAs
AND134CRP	Red	Red Diffused	660	360	600	20	40	GaAlAs
AND116CR	Red	Milky Diffused	660	56	130	20	60	GaAlAs
AND180HRP	Red	Clear	644	1,800	6,000	20	8	InGaAlP
AND157HRP	Red	Clear	644	700	1,800	20	20	InGaAlP
AND113S	Red	Red, Clear	625	50	150	10	30	GaAsP
AND114S	Red	Red, Diffused	625	20	50	10	60	GaAsP
AND114SP	Red	Red, Diffused	625	20	50	10	60	GaAsP
AND180HSP	Red	Clear	623	3,200	6,000	20	8	InGaAlP
AND157HSP	Red	Clear	632	4,500	5,650	20	30	InGaAlP
T-1 Package (3mm)								
AND123R	Red	Red, Clear	700	5	12	10	50	GaP
AND124R	Red	Red, Diffused	700	1.3	3.0	10	60	GaP
AND125CRP	Red	Clear	660	360	600	20	36	GaAlAs
AND126CR	Red	Milky Diffused	660	75	180	20	65	GaAlAs
AND262HS	Red	Clear	632	400	630	20	10	InGaAlP
Surface Mount Package: Flat Lens (2.0 x 1.25 x 1.1 mm); Flat Lens LP (1.6 x 0.80 x 0.40 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4RA (Flat)	Red	Clear	660	20	40	20	140	GaAlAs
AND4RRA (Rt Agl)	Red	Clear	632	90	139	20	120	InGaAlP
AND4SA (Flat)	Red	Clear	640	1.53	5.0	20	140	GaAsP
AND5RA (Domed)	Red	Clear	660	290	480	20	30	GaAlAs
AND5SA (Domed)	Red	Clear	640	24	40	20	30	GaAsP
AND7RA (Flat LP)	Red	Clear	624	90	135	20	120	InGaAlP

Orange-Amber LED Lamps

T-3 Package (10mm)								
AND190HAP	Amber	Clear	612	4,500	8,000	20	6	InGaAlP
AND190HOP	Orange	Clear	620	4,000	6,000	20	6	InGaAlP
T-1 3/4 Package (5mm)								
AND157HAP	Amber	Clear	612	1,200	2,000	20	20	InGaAlP
AND185HOP	Orange	Clear	620	9,000	11,750	20	6	InGaAlP
AND185HAP	Amber	Clear	612	8,500	11,150	20	6	InGaAlP
AND156HOP	Orange	Clear	620	630	800	20	25	InGaAlP
T-1 Package (3mm)								
AND262HOP	Orange	Clear	620	250	420	20	40	InGaAlP
AND262HAP	Amber	Clear	612	240	390	20	40	InGaAlP
Surface Mount Package:								
Flat Lens (2.0 x 1.25 x 1.1 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4OA (Flat)	Orange	Clear	620	27	60	20	140	InGaAlP
AND5OA (Domed)	Orange	Clear	620	490	750	20	30	InGaAlP

Notes:

- Surface Mount Devices are supplied in Tape & Reel packaging in the following manner:
Flat Lens 3,000 pcs/reel; Domed Lens 1,000 pcs/reel; Right Angle & TOP LED 2,000 pcs/reel
- T-1 and T1 3/4 LEDs can be supplied in Tape & Reel with a minimum order and shipment of 10K pcs of each part.
T-1 type 2,000 pcs/reel; T-1 3/4 type 1,000 pcs/reel



Yellow LED Lamps

Part Number	LED Color	Lens Color	λ Peak (nm)	Luminous Intensity, I_v (mcd)		$(I_F - mA)$	Total Angle (degree)	Material
				Min	Typ			
T-3 Package (10mm)								
AND190HYP	Yellow	Clear	590	4,500	6,300	20	6	InGaAlP
T-1 3/4 Package (5mm)								
AND180HYP	Yellow	Clear	590	6,000	9,750	20	6	InGaAlP
ANDS4E38XX16	Yellow	Clear	590	2,500	3,200	20	16	InGaAlP
ANDS4E38XX20	Yellow	Clear	590	2,000	3,000	20	20	InGaAlP
AND180AYP	Yellow	Clear	590	1,600	2,500	20	6	InGaAlP
AND157HYP	Yellow	Clear	590	1,200	2,500	20	15	InGaAlP
AND156EYP	Yellow	Clear	590	300	700	20	50	InGaAlP
AND156QYP	Yellow	Clear	590	3,600	4,000	20	30	InGaAlP
AND156SYP	Yellow	Clear	590	4,500	6,200	20	30	InGaAlP
AND181YP	Yellow	Yellow, Clear	590	37	75	10	15	GaAsP
AND113Y	Yellow	Yellow, Clear	590	20	50	10	30	GaAsP
AND113YP	Yellow	Yellow, Clear	590	20	50	10	30	GaAsP
AND114Y	Yellow	Yellow, Diffused	590	5	18	10	60	GaAsP
AND114YP	Yellow	Yellow, Diffused	590	5	18	10	60	GaAsP
T-1 Package (3mm)								
AND262YAP	Yellow	Clear	595	72	120	20	36	InGaAlP
AND123Y	Yellow	Yellow, Clear	590	10	45	10	50	GaAsP
AND124Y	Yellow	Yellow, Diffused	590	8	20	10	60	GaAsP
Surface Mount Package: Flat Lens (2.0 x 1.25 x 1.1 mm); Flat Lens LP (1.6 x 0.80 x 0.40 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4YA (Flat)	Yellow	Clear	590	58	80	20	140	InGaAlP
AND5YA (Domed)	Yellow	Clear	590	395	625	20	30	InGaAlP
AND7YA (Flat LP)	Yellow	Clear	589	90	135	20	120	InGaAlP

Green LED Lamps

T-3 Package (10mm)								
AND190HGP	Green	Clear	574	1,200	2,000	20	8	InGaAlP
AND190GCP	Green	Clear	567	370	700	20	8	GaP
T-1 3/4 Package (5mm)								
AND183HGP	Green	Clear	574	850	2,500	20	8	InGaAlP
AND412HG	Green	Clear	505	1,250	2,200	20	12	InGaN
AND520HG	Green	Clear	525	2,500	5,000	20	20	InGaN
AND240GCP	Green	Clear	567	350	780	20	20	GaP
AND135PGP	Green	Clear	567	300	500	20	25	GaP
AND113G	Green	Green, Clear	565	20	50	10	30	GaP
AND113GP	Green	Green, Clear	565	20	50	10	30	GaP
AND114G	Green	Green, Diffused	565	5	18	10	60	GaP
AND114GP	Green	Green, Diffused	565	5	18	10	60	GaP
T-1 Package (3mm)								
AND160NG	Green	Clear	570	200	250	20	15	GaP
AND262GCP	Green	Clear	567	70	110	20	36	GaP
AND262HG	Green	Clear	525	630	1,000	20	35	GaN
AND123G	Green	Green, Clear	565	20	50	10	50	GaP
AND124G	Green	Green, Diffused	565	8	20	10	60	GaP
Surface Mount Package: Flat Lens (2.0 x 1.25 x 1.1 mm); Flat Lens LP (1.6 x 0.80 x 0.40 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4GA (Flat)	Green	Clear	570	8	15	20	140	GaP
AND4GRA (Rt Angle)	Green	Clear	540	84	140	20	120	InGaN
AND4PGA (Flat)	Green	Clear	555	0.85	2.0	20	140	GaP
AND5GA (Domed)	Green	Clear	570	75	125	20	30	GaP
AND5G (Domed)	Green	Clear	570	70	120	20	30	GaP
AND5PGA (Domed)	Green	Clear	555	20	35	20	30	GaP
AND6GA (TOP LED)	Green	Clear	525	110	170	20	120	InGaN
AND7GA (Flat LP)	Green	Clear	525	112	180	20	120	InGaN
AND7GB (Flat LP)	Green	Clear	573	30	45	20	120	InGaN



Blue LED Lamps

Part Number	LED Color	Lens Color	λ Peak (nm)	Luminous Intensity, I_v (mcd)		$(I_F - mA)$	Total Angle (degree)	Material
				Min	Typ			
T-3 Package (10mm)								
AND190HBA	Blue	Clear	430	1,000	1,500	20	10	GaN
AND190HBB	Blue	Clear	470	630	1,250	20	15	InGaN
T-1 3/4 Package (5mm)								
AND410HB	Blue	Clear	430	250	400	20	10	GaN
AND520HB	Blue	Clear	475	630	900	20	20	InGaN
T-1 Package (3mm)								
AND262HBA	Blue	Clear	430	160	250	20	40	GaN
AND262HBB	Blue	Clear	470	150	300	20	45	InGaN
Surface Mount Package: Flat Lens (2.0 x 1.25 x 1.1 mm); Flat Lens LP (1.6 x 0.80 x 0.40 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4BA (Flat)	Blue	Clear	430	16	20	20	140	GaN
AND4BC (Flat)	Blue	Clear	468	30	50	20	140	InGaN
AND4BRA (Rt Angle)	Blue	Clear	430	17	22	20	120	GaN
AND4BRB (Rt Angle)	Blue	Clear	470	23	29	20	120	InGaN
AND5BA (Domed)	Blue	Clear	430	90	112	20	30	GaN
AND5BB (Domed)	Blue	Clear	470	118	150	20	30	InGaN
AND6BA (TOP LED)	Blue	Clear	430	35	55	20	120	GaN
AND6BC (TOP LED)	Blue	Clear	468	57	85	20	120	InGaN
AND6BD (TOP LED)	Blue	Clear	468	90	135	20	120	InGaN
AND7BA (Flat LP)	Blue	Clear	470	18	30	5	120	InGaN

White LED Lamps

T-3 Package (10mm)								
AND190HW	White	Clear	420-700	3,300	6,500	20	15	InGaN
T-1 3/4 Package (5mm)								
AND420HWA	White	Clear	420-700	2,500	3,500	20	15	InGaN
AND420HWB	White	Clear	420-700	7,150	10,000	20	20	InGaN
AND520HW	White	Clear	420-700	2,850	4,000	20	25	InGaN
AND720HW	White	Clear	420-700	7,150	9,000	20	20	InGaN
T-1 Package (3mm)								
AND262HW	White	Clear	420-700	1,800	2,250	20	35	InGaN
Surface Mount Package: Flat Lens (2.0 x 1.25 x 1.1 mm); Flat Lens LP (1.6 x 0.80 x 0.40 mm); Domed Lens (3.2 x 2.4 x 2.5 mm); TOP LED (3.5 x 2.8 x 1.9 mm); Rt Angle Lens (3.0 x 1.0 x 2.0 mm)								
AND4WA (TOP LED)	White	Clear	420-700	100	160	20	120	InGaN
AND4WB (Flat)	White	Clear	420-700	90	182	20	150	InGaN
AND7WA (Flat LP)	White	Clear	420-700	28.5	45	5	130	InGaN

Dual Color LED Lamps

AND-2451RGL	Red/Green	Milky, Diffused	700/567	0.7/0.8	1.2/2.7	10	120	GaAsP/GaP
AND126SG	Red/Green	Milky, Diffused	635/565	12/12	14/14	10	60	GaAsP/GaP
AND116SG	Red/Green	Milky, Diffused	635/565	10/10	12/12	10	70	GaAsP/GaP
AND208SGA	Red/Green	Milky, Diffused	625/565	8.0/8.0	14.0/14.0	10	110	GaAsP/GaP
AND208YGA	Yellow/Green	Milky, Diffused	590/565	3.2/8.0	6.0/14.0	10	110	GaAsP/GaP

Special Shape Packaged LED Lamps

AND205RA	Red	Red, Diffused	700	0.5	1.0	10	1 x 5	GaP
AND208RA	Red	Red, Diffused	700	0.5	1.0	10	2 x 5	GaP
AND211RA	Red	Red, Diffused	700	0.5	1.0	10	2 x 4	GaP
AND218RPA	Red	Red, Diffused	700	0.5	1.0	10	2 x 5	GaP
AND226R	Red	Red, Diffused	700	0.5	1.0	10	Flat	GaP
AND233CRP	Red	Clear	660	320	800	20	15	GaAlAs
AND205YA	Yellow	Yellow, Diffused	590	2.0	4.0	10	1 x 5	GaAsP
AND211YA	Yellow	Yellow, Diffused	590	2.0	4.0	10	2 x 4	GaAsP
AND218YPA	Yellow	Yellow, Diffused	590	2.0	4.0	10	2 x 5	GaAsP
AND226Y	Yellow	Yellow, Diffused	590	2.0	4.0	10	Flat	GaAsP
AND208YA	Yellow	Yellow, Diffused	590	2.0	3.5	10	2 x 5	GaAsP
AND233GCP	Green	Clear	567	60	150	20	25	GaP
AND205GA	Green	Green, Diffused	565	2.0	4.0	10	1 x 5	GaP
AND211GA	Green	Green, Diffused	565	2.0	4.0	10	2 x 4	GaP
AND218GPA	Green	Green, Diffused	565	2.0	4.0	10	2 x 5	GaP
AND226G	Green	Green, Diffused	565	2.0	4.0	10	Flat	GaP
AND208GA	Green	Green, Diffused	565	2.0	3.5	10	2 x 5	GaP



Red and Green LED Segment Displays

Part Number	LED Color	Face Color	Display Height (inch)	Characteristics	Luminous Intensity, I_v (mcd)	$(I_F = -mA)$	Polarity	Material
					Typ.			
7 Segments								
AND2307SAL	Red	Red	2.30	RHDP, 10 pin	7.5	10	C-A	GaAsP
AND2307SCL	Red	Red	2.30	RHDP, 10 pin	7.5	10	C-C	GaAsP
AND1510SAL	Red	Red	1.50	RHDP, 10 pin	4.6	10	C-A	GaAsP
AND1510SCL	Red	Red	1.50	RHDP, 10 pin	4.6	10	C-C	GaAsP
AND4310SAL	Red	Red	0.43	RHDP & LHDP, 14 pin	3.3	10	C-A	GaAsP
AND4310SCL	Red	Red	0.43	RHDP & LHDP, 14 pin	3.3	10	C-C	GaAsP
AND5610SAL	Red	Red	0.56	RHDP, 10 pin	3.3	10	C-A	GaAsP
AND5610SCL	Red	Red	0.56	RHDP, 10 pin	3.3	10	C-C	GaAsP
AND8010SAL	Red	Red	0.80	RHDP, 16 pin	3.8	10	C-C	GaAsP/GaP
AND8010SCL	Red	Red	0.80	RHDP, 16 pin	3.8	10	C-C	GaAsP/GaP
16 Segments								
AND5420OALB	Red	Red	0.54	RHDP, 18 pin	3.3	10	C-A	GaAsP
AND5420OCLB	Red	Red	0.54	RHDP, 18 pin	3.3	10	C-C	GaAsP
AND8010SALB	Red	Red	0.80	RHDP, 18 pin	3.8	10	C-C	GaAsP/GaP
AND8010SCLB	Red	Red	0.80	RHDP, 18 pin	3.8	10	C-C	GaAsP/GaP
7 Segments								
AND2307GAL	Green	Gray	2.30	RHDP, 10 pin	6.5	10	C-A	GaP
AND2307GCL	Green	Gray	2.30	RHDP, 10 pin	6.5	10	C-C	GaP
AND8010GAL	Green	Gray	0.80	RHDP & LHDP, 16 pin	3.3	10	C-A	GaP
AND8010GCL	Green	Gray	0.80	RHDP & LHDP, 16 pin	3.3	10	C-C	GaP
AND4310GAL	Green	Green	0.43	RHDP & LHDP, 14 pin	2.9	10	C-A	GaP