

PART NUMBER	LED COLOR
591-2001-102	HI.EFF. RED
591-2001-107	
591-2001-113	
591-2101-102	AlGaAs RED
591-2101-107	
591-2101-113	
591-2201-102	HI.INTENSITY GREEN
591-2201-107	
591-2201-113	
591-2301-102	GREEN
591-2301-107	
591-2301-113	
591-2401-102	YELLOW
591-2401-107	
591-2401-113	
591-2601-102	BLUE
591-2601-107	
591-2601-113	
591-2701-102	AlInGaP YELLOW
591-2701-107	
591-2701-113	
591-2801-102	WHITE
591-2801-107	
591-2801-113	

LED COLOR : HI.EFF.RED GREEN YELLOW						
OPERATING CHARACTERISTICS AT 25°C AMBIENT						
CHARACTERISTICS	HI.EFF.RED	MIN	TYP	MAX	UNITS	TEST CONDITIONS
LUMINOUS INTENSITY	HI.EFF.RED	5.6	9.8	14.0	mcd	I _F = 10 mA
	GREEN	7.1	10.6	14.0		
	YELLOW	7.1	12.6	18.0		
FORWARD VOLTAGE	HI.EFF.RED		2.0	2.5	V	I _F = 10 mA
	GREEN		2.0	2.5		
	YELLOW		2.0	2.5		
REVERSE VOLTAGE	HI.EFF.RED		5		V	I _R = 10 µA
	GREEN		5			
	YELLOW		5			
PEAK WAVELENGTH	HI.EFF.RED		635		nm	I _F = 10 mA
	GREEN		572			
	YELLOW		586			
DOMINANT WAVELENGTH	HI.EFF.RED	622	628	634	nm	I _F = 10 mA
	GREEN	564	570	576		
	YELLOW	580	587	595		

LED COLOR : HI.EFF.RED GREEN YELLOW						
ABSOLUTE MAXIMUM RATING AT 25°C AMBIENT						
CHARACTERISTICS	HI.EFF.RED	MIN	TYP	MAX	UNITS	TEST CONDITIONS
POWER DISSIPATION	HI.EFF.RED			95	mW	
	GREEN					
	YELLOW					
CONTINUOUS FORWARD CURRENT	HI.EFF.RED			30	mA	
	GREEN					
	YELLOW					
OPERATING TEMPERATURE	RED,GRN,YEL			-40 TO 100	°C	
STORAGE TEMPERATURE	RED,GRN,YEL			-40 TO 100	°C	

LED COLOR : BLUE						
OPERATING CHARACTERISTICS AT 25°C AMBIENT						
CHARACTERISTICS	MIN	TYP	MAX	UNITS	TEST CONDITIONS	
LUMINOUS INTENSITY		6.0		mcd	I _F = 10 mA	
FORWARD VOLTAGE		3.5	4.2	V	I _F = 10 mA	
REVERSE CURRENT		.01	10	µA	V _R = 5 V	

LED COLOR : BLUE						
ABSOLUTE MAXIMUM RATING AT 25°C AMBIENT						
CHARACTERISTICS	MIN	TYP	MAX	UNITS	TEST CONDITIONS	
POWER DISSIPATION			100	mW		
DERATE LINEARLY FROM 55°C			0.44	mW/°C		
CONTINUOUS FORWARD CURRENT			20	mA		
OPERATING TEMPERATURE			-40 TO 100	°C		
STORAGE TEMPERATURE			-40 TO 100	°C		
SOLDER PROFILE: IR 235 °C PEAK FOR 15 SEC / 185 °C FOR 90 SEC. MAX.						

LED COLOR : AlGaAs RED HI.INT.GREEN AlInGaP YELLOW						
OPERATING CHARACTERISTICS AT 25°C AMBIENT						
CHARACTERISTICS	AlGaAs RED	MIN	TYP	MAX	UNITS	TEST CONDITIONS
LUMINOUS INTENSITY	AlGaAs RED		23.9		mcd	I _F = 10 mA
	HI.INT. GREEN		9.1			
	AlInGaP YELLOW		33.6			
FORWARD VOLTAGE	AlGaAs RED		1.8	2.4	V	I _F = 20 mA
	HI.INT. GREEN		2.1	2.6		
	AlInGaP YELLOW		2.0	2.4		
REVERSE VOLTAGE	AlGaAs RED	5			V	I _R = 10 mA
	HI.INT. GREEN	5				
	AlInGaP YELLOW	5				
DOMINANT WAVELENGTH	AlGaAs RED		638		nm	
	HI.INT. GREEN		569			
	AlInGaP YELLOW		595			

LED COLOR : AlGaAs RED HI.INT.GREEN AlInGaP YELLOW						
ABSOLUTE MAXIMUM RATING AT 25°C AMBIENT						
CHARACTERISTICS	RED,GRN,YEL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
POWER DISSIPATION	RED,GRN,YEL			100	mW	
DERATE LINEARLY FROM 25°C	AlGaAs RED			0.8	mW/°C	
	HI.INT. GREEN			0.6		
	AlInGaP YELLOW			0.6		
CONTINUOUS FORWARD CURRENT	AlGaAs RED			40	mA	
	HI.INT. GREEN			30		
	AlInGaP YELLOW			50		
PEAK FORWARD CURRENT (1/10 DUTY CYCLE, 0.1 ms PULSE WIDTH)	AlGaAs RED			200	mA	
	HI.INT. GREEN			120		
	AlInGaP YELLOW			160		
OPERATING TEMPERATURE	RED,GRN,YEL			-55 TO 100	°C	
STORAGE TEMPERATURE	RED,GRN,YEL			-55 TO 100	°C	
INFRARED REFLOW SOLDERING	RED,GRN,YEL			260°C FOR 5 SEC		
VAPOR PHASE SOLDERING	RED,GRN,YEL			215°C FOR 3 MIN		

LED COLOR : WHITE						
OPERATING CHARACTERISTICS AT 25 °C AMBIENT						
LED CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS	
LUMINOUS INTENSITY		37.6		mcd	I _F = 10 mA	
FORWARD VOLTAGE		3.5	4.2	V	I _F = 20 mA	
REVERSE CURRENT		.01	10	µA	V _R = 5 V	
COLOR COORDINATES	X	.29	.32	.365	I _F = 20 mA	
	Y	.22	.31	.42		

LED COLOR : WHITE						
ABSOLUTE MAXIMUM RATINGS AT 25 °C AMBIENT						
CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS	
POWER DISSIPATION			85	mW		
CONTINUOUS FORWARD CURRENT			20	mA		
DERATE LINEARLY FROM 75 °C			.6	mW/°C		
PEAK REVERSE VOLTAGE			5V			
SOLDERING PROFILE: IR - 235 °C PEAK. - 15 SEC., 185 °C - 90 SEC MAX.						
OPERATING TEMPERATURE			-40 °C TO +100 °C			
STORAGE TEMPERATURE			-40 °C TO +100 °C			

REV.	ECN NO.	REVISIONS	DRN.	KD.	APP.	DATE
A	---	NEW RELEASE	YY	---	N.O.	5-17-93
B	---	ADDED NOTES 6-8	YY	---	N.O.	1-12-94
C	---	CHANGE NOTE 7 - CHANGE WAVE-LENGTH FROM PEAK TO DOMINANT LED SPEC CHANGE	YY	---	N.O.	3-7-94
D	---	ADDED HI. GREEN AND AlInGaP YELLOW AND CHANGE TO ANOTHER AlGaAs RED CHANGE NOTE 8	AV	N.O.	N.O.	3-8-00
E	---	ADDED P/N 591-2801-102, 591-2801-107, 591-2801-113 AND WHITE LED SPEC ALSO ADDED NOTE 10, 11	YIS	D.C.	N.O.	3-1-02
F	---	UPDATED LED SPEC FOR HI.EFF.RED, GREEN & YELLOW	YIS	JMC	Y.C.	2-21-03
G	---	ADDED 591-2601-102, -107, -113 ADDED BLUE LED SPEC TABLE.	YIS			

NOTES :

- 1- MILLIMETER DIMENSIONS SHOWN FOR REFERENCE ONLY
- 2- PAD NUMBERS ARE FOR REFERENCE ONLY , DESIGNATION NON-EXISTENT ON PART
- 3- STORAGE CONDITIONS FOR TAPED PRODUCT: RE-TAPING MAY BE NECESSARY FOR PRODUCTS STORED MORE THAN TWELVE MONTHS
- 4- ORDER QUANTITY IS LED ASSEMBLIES , NOT REELS
- 5- ...-102 SUFFIX MEANS PARTS ARE PACKED ON A 20 pc SAMPLE STRIP
...-107 SUFFIX MEANS PARTS ARE PACKED ON A 7 INCH REEL , 400 pcs/REEL
...-113 SUFFIX MEANS PARTS ARE PACKED ON A 13 INCH REEL , 1600 pcs/REEL
- 6- LENS MOVEMENT IN RELATIONSHIP TO THE HOUSING IS :
.009" T.I.R. VERTICALLY
.007" T.I.R. HORIZONTALLY
- 7- FRONT AND REAR TERMINALS OF THE ASSEMBLY TO BE WITHIN .005 COPLANARITY
- 8- LED LEAD FRAME MATERIAL:
CORE MATERIAL = COPPER
1st PLATING = Ag-100% , THICKNESS ABOUT 90 MICRO-INCH
2nd PLATING = 90% Sn - 10% Pb , THICKNESS RANGE 200 to 800 MICRO-INCH
- 9- DIALIGHT PART NUMBERS =
591-2x01-102 591-2x01-107 591-2x01-113
10. DRY PACK PACKAGING CONSIST OF A DESICCANT, HUMIDITY INDICATOR CARD IN A VACUUM SEALED MOISTURE BARRIER BAG, MOISTURE SENSITIVITY LABEL LEVEL 2 ON OUTSIDE OF BAG, AS PER JEDEC STD. 033.
11. ATTENTION: OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

