Product Information Bulletin

DRAGONtape®

- 6 Golden DRAGON™ LEDs in series connection with a one inch spacing
- Self-adhesive backing for easy, reliable assembly
- Intended for use with constant current power supplies for optimal efficiency
- Circuit board can be cut to reconfigure LEDs; connection made by soldering wires
- Size of entire module – 6 LEDs (LxW): 5.9 in x 1.0 in (150 mm x 25 mm)
- Size of smallest subunit – one LED (LxW): 1.0 in x 1.0 in (25 mm x 25 mm)
- Better efficacy than incandescent or tungsten halogen
- Comparable illumination to many fluorescent lamp fixtures
- New longer service life when installed with proper thermal management
- No ultraviolet or infrared radiation

OSRAM's new DRAGONtape brings LED lighting to a level that makes illumination applications possible.

The DRAGONtape, like our standard LED modules, is available in many colors but the emphasis is on white for illumination applications. DRAGONtape uses the new OSRAM Golden DRAGON LED that delivers efficacy and service life far in excess of incandescent lamps, offering cost savings for energy and replacement labor. With a forward emitting luminous flux comparable to that of many fluorescent lamp fixtures, DRAGONtape may be specified for fluorescent specialty applications such as task lighting, backlit displays and refrigerated display cases. The DRAGONtape consists of six LEDs on a lightweight circuit board that can be used whole or subdivided. A self-adhesive backing allows the tape to be mounted on a substrate of suitable thermal conductivity to transfer heat away from the LEDs.

The module operates on special constant current power supplies, available in AC-DC format for standard lighting applications and DC-DC format for specialty applications that already employ DC power, such as solar powered batteries and certain transportation vehicles.

Product Availability

Wattage (W)	Product	LED Color
7.2	DRAGONtape/OS/DT6/W2-865	6500 K
7.2	DRAGONtape/OS/DT6/W2-854	5400 K
7.2	DRAGONtape/OS/DT6/W2-847	4700 K
7.2	DRAGONtape/OS/DT6/W2-833	3300 K
4.8	DRAGONtape/OS/DT6/A1	617 nm
4.8	DRAGONtape/OS/DT6/Y1	587 nm
7.2	DRAGONtape/OS/DT6/V1	505 nm
7.2	DRAGONtape/OS/DT6/B1	465 nm

Application Information

Applications

Task lighting – reading lights, under cabinet lighting
Accent lighting – cove lighting, outdoor/landscape lighting
Refrigerated and freezer display case lighting
Light box, backlit graphics, edge lighting
Vehicle cabin lighting – RV, truck, boat, airplane
Solar powered installations

Power Supply Information

The DRAGONtape is presently compatible with the OT9/100-120/350 (NAED 51525) and the OT9/10-24/350 DIM E (NAED 51526) power supply products. Contact your OSRAM SYLVANIA representative for specific information on these products and possible updates to this list.

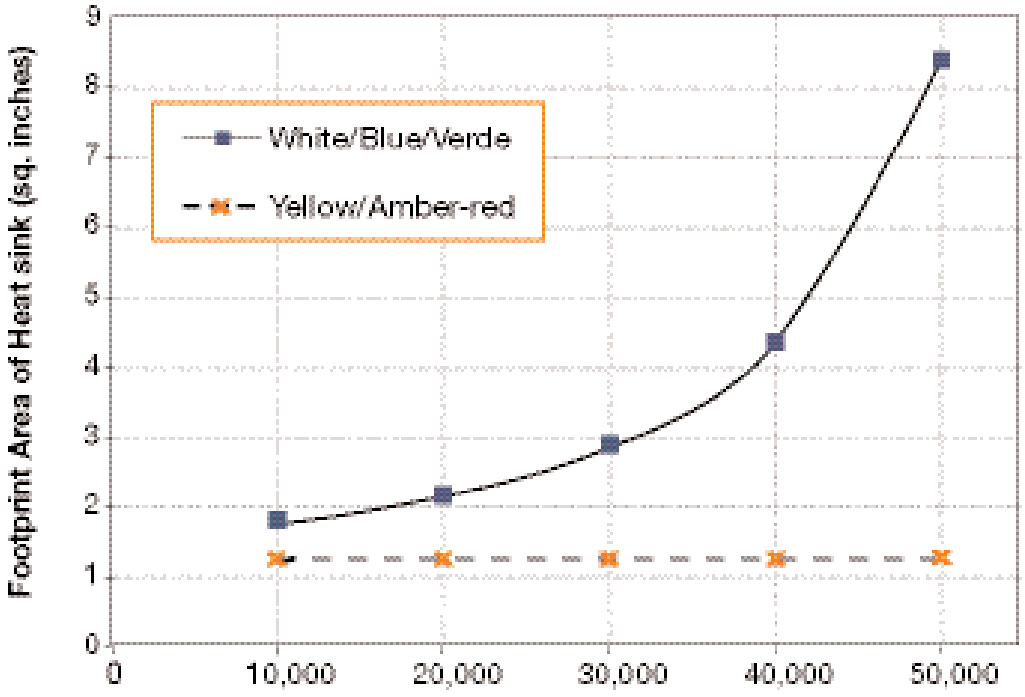
Application Information (continued)

Application Notes

1. Module is intended for use with 350 mA constant current drive condition as is provided by the OT9/100-120/350 and OT9/10-24/350 DIM E (see PIB ECS052R1 for details). The module is not intended for use with constant voltage power supplies, including other OSRAM LED power supplies.
2. For the white, blue and verde DRAGONtape products, the OT9 power supplies can power up to six LEDs (i.e. one complete module). For the yellow and red DRAGONtape products, the OT9 can power up to 9 LEDs (i.e. 1.5 modules).
3. Installation of the DRAGONtape must include provision for thermal management to avoid premature failure of the product and to obtain expected service life. Service life (i.e. lumen depreciation) is primarily a function of LED temperature which is to be monitored on the circuit board at the designated “Tc-Point”. (A Tc-Point temperature of 40°C should be sufficient to enable a service life of 50,000 hours for the white DRAGONtape.)
4. There is no exact installation prescription to obtaining an appropriate Tc-Point temperature because every fixture design is different. In general, the DRAGONtape module should be adhered to a clean, flat metal surface which has enough surface area to transfer the heat from the LED to the surrounding air. The metal surface can be part of a conventional finned heat sink or can be part of the mass of the fixture itself. A very “ballpark” starting point can be interpreted from the chart below which shows approximate heat sink surface area requirements for given service life expectations for individual DRAGON LEDs (i.e multiply area values by six for an entire DRAGONtape module).
5. Concerning fixture design, it is important to understand that once heat is transferred to a “heat sink”, that heat must still be allowed to escape the “system”. A heat sink transferring the thermal energy to the inside of an enclosed cavity may ultimately be of little use.
6. The fixture makers’ strategy should be to design a prototype fixture and test that fixture in an appropriate ambient environment while monitoring the temperature at the Tc-Point which should be allowed enough time to reach thermal equilibrium. In the end, the heat sink areas from the chart below only represent a starting point for initial design work while the Tc-Point temperature serves as the emperical test of proper thermal management. Tc-Point temperature can be measured with a standard thermocouple in direct contact with the circuit board at the Tc-Point or by use of ML4C Series non-reversible OMEGALABELS (www.omega.com) or equivalent.

Approximate Heat Sink Size to Reach Lifetime Targets per LED

(Vertically oriented flat aluminum plate: total cooling surface area equals 2x footprint area)



Safety Information

WARNING: ONLY QUALIFIED PERSONNEL SHOULD PERFORM INSTALLATION.

TO AVOID ELECTRICAL SHOCK OR COMPONENT DAMAGE, DISCONNECT POWER BEFORE ATTEMPTING INSTALLATION OF THE POWER SUPPLIES AND/OR MODULES.

Failure to install the power supplies and/or LED modules in accordance with the National Electric Code (NEC), all applicable Federal, State and local electric codes as well as the specific Underwriter's Laboratories (UL) safety standards for the installation, location and application may cause serious personal injury, death, property damage and/or product malfunction. These instructions are guidelines for installation of OSRAM LED modules and power supplies. Installation requirements may vary depending on the application. Licensed electricians should provide all installation services for connection of both primary and secondary (input/output) of the power supplies.

1. The LED module and all of its components must not be subject to mechanical stress.
2. Assembly must not damage or destroy the conducting paths on the circuit board.
3. Installation of the LED Modules and OSRAM LED power supplies need to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
4. Correct electrical polarity needs to be observed. Incorrect polarity may destroy the module.
5. All LEDs, up to the maximum number allowable for the power supply, should be installed in a single electrical series connection. Electrical parallel connection can result in unbalanced voltage distribution resulting in damaging and potentially hazardous overload of some LEDs.
6. Pay attention to standard ESD precautions when handling and installing the module.
7. Only install according to the heat sinking parameters outlined in the Application Notes section.
8. Modules may be hot to touch; use caution.

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore it is necessary to operate the modules with an electronically stabilized power supply offering protection against the above mentioned safety risks.

OSRAM OPTOTRONIC power supplies are specifically designed with protection features for safe operation.

When using power supplies other than OPTOTRONIC the following basic safety features should be verified in addition to any other application specific concerns and local safety codes:

- Short circuit protection
- Overload protection
- Overheat protection
- Correct output voltage, including consideration for ripple and spikes.

Assembly Information/Application Notes

1. Solder connections should only be performed on designated solder pads at the locations of LED subunit marked "+" and "-". During soldering, do not exceed the maximum soldering time of 10 seconds and the maximum soldering temperature of 260°C.
2. The mounting of the module is facilitated by means of the double-sided adhesive on the back surface of the module. Care must be taken to provide a clean and dry mounting surface, free of oils or silicone coatings as well as dirt particles. The mounting substrate must have sufficient structural integrity. Take care to completely remove the adhesive backing. Once the module is appropriately positioned, press on the module with about 20 N/cm^2 (refer to application techniques of 3M adhesives transfer tapes).
3. The module should be installed onto flat surfaces to facilitate intimate thermal contact between the circuit board and the substrate material. The module should not be installed onto curved surfaces.

Minimum and Maximum Ratings For DRAGONtape (all colors)

Parameter	Rating
Operating Temperature at Tc-Point	-30…+65°C (-22…+149°F)
Storage Temperature	-30…+85°C (-22…+185°F)
Maximum Allowable Current (dc)	350 mA
Maximum Reverse Voltage	0 V

Notes:

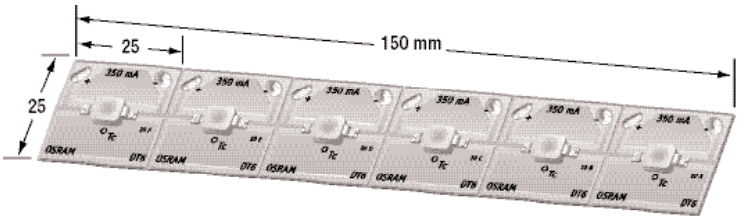
1. Exceeding maximum ratings may damage the LED module and cause potential safety hazards.
2. Elevated operating temperatures can be expected to negatively impact the service life in terms of lumen output.
3. Incorrect wiring (i.e. reverse polarity) with constant current power supplies may damage the LED module.
4. Not intended for use with constant voltage power supplies.

Ordering and Specification Information

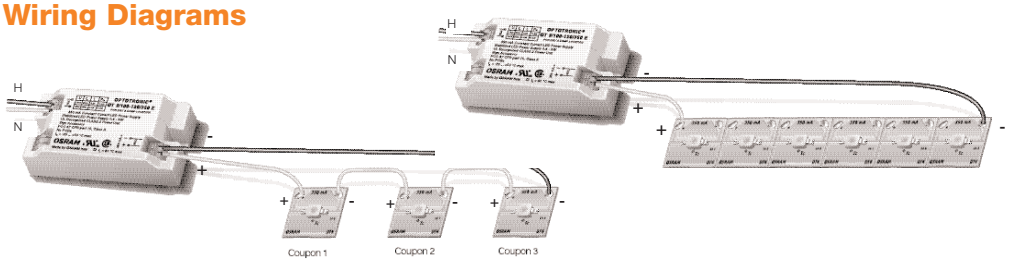
Number	Ordering Abbreviation	Color	Number of LEDs	Current (mA)	LED Load (W)	Viewing Angle (°)	Wavelength (CCT K)	Luminous Flux (lumens)	Lumens (ft)
70106	DRAGONtape/OS/DT6/W2-847	White	6	350	7.2	120	4700 K	150	300
70099	DRAGONtape/OS/DT6/W2-854	White	6	350	7.2	120	5400 K	150	300
70100	DRAGONtape/OS/DT6/W2-865	White	6	350	7.2	120	6500 K	150	300
70151**	DRAGONtape/OS/DT6/W2-833	White	6	350	7.2	120	3300 K	120	240
70101	DRAGONtape/OS/DT6/A1	Red	6	350	4.8	120	617 nm	108	216
70117	DRAGONtape/OS/DT6/Y1	Yellow	6	350	4.8	120	587 nm	108	216
70118	DRAGONtape/OS/DT6/V1	Verde	6	350	7.2	120	505 nm	150	300
70119	DRAGONtape/OS/DT6/B1	Blue	6	350	7.2	120	465 nm	48	96

**CRI>70 for the 3300K. All other white color temperatures have a CRI>80. Due to the special conditions of the manufacturing processes of LED, the typical data of technical parameters can only reflect statistical figures and do not necessarily correspond to the actual parameters of each single product which could differ from the typical data.

LED Module Dimensions



Wiring Diagrams



Power Supply Ordering Information

OPTOTRONIC® OT9/100 – 120/350 E or OT9/10-24/350 DIM E

LED Item No.	Color	Max No. of Modules per Supply	Load Watts
70106	White	1	7.2
70099	White	1	7.2
70100	White	1	7.2
70151	White	1	7.2
70101	Red	1.5	7.2
70117	Yellow	1.5	7.2
70118	Verde	1	7.2
70119	Blue	1	7.2

Ordering Guide

DRAGONtape	/	OS	/	DT6	/	W2-865
DRAGONtape		OSRAM		ID number		Color code- Color Temperature W2-865= White, 6500 K W2-854= White, 5400 K W2-847= White, 4700 K W2-833= White, 3300 K A1= Red, Y1= Yellow V1= Verde, B1= Blue

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