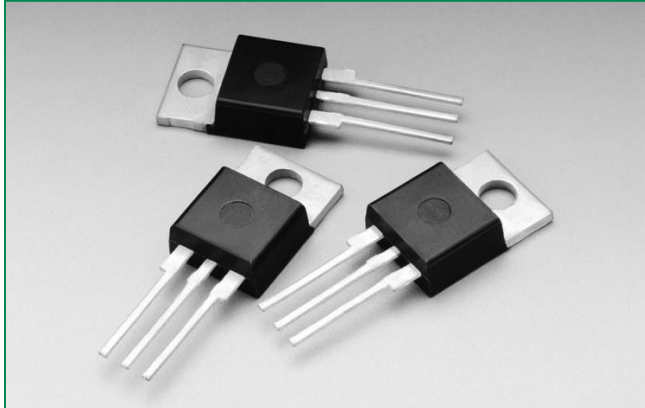


**RoHS Dxx15L & Dxx20L & Dxx25L Series**



**Description**

Silicon rectifiers that are excellent for DC phase control applications with motor loads.  
Isolated mounting tab allows for use in circuits with common anode or common cathode connections.


**Features & Benefits**

- RoHS Compliant
- Glass – passivated junctions
- Voltage capability up to 1000 V
- Surge capability up to 350 A

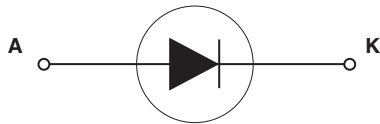
**Applications**

Typical applications are AC to DC solid-state switches for industrial power tools, exercise equipment, white goods, and commercial appliances.  
Internally constructed isolated package is offered for ease of heat sinking with highest isolation voltage.

**Agency Approval**

Agency	Agency File Number
	L Package : E71639

**Schematic Symbol**



**Main Features**

Symbol	Value	Unit
$I_{T(RMS)}$	15 / 20 / 25	A
$V_{RRM}$	400 to 1000	V

**Absolute Maximum Ratings**

Symbol	Parameter	Test Conditions	Value			Unit
			Dxx15L	Dxx20L	Dxx25L	
$I_{F(RMS)}$	RMS forward current	Dxx15L: $T_C = 85^\circ C$	15	20	25	A
$I_{F(AV)}$	Average forward current	Dxx20L/Dxx25L: $T_C = 80^\circ C$	9.5	12.7	15.9	A
$I_{FSM}$	Peak non-repetitive surge current	single half cycle; $f = 50Hz$ ; $T_J$ (initial) = $25^\circ C$	188	255	300	A
		single half cycle; $f = 60Hz$ ; $T_J$ (initial) = $25^\circ C$	225	300	350	
$I^2t$	$I^2t$ Value for fusing	$t_p = 8.3 ms$	210	374	508	A <sup>2</sup> s
$T_{stg}$	Storage temperature range		-40 to 150			°C
$T_J$	Operating junction temperature range		-40 to 125			°C

Note: xx = voltage

**Electrical Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)**

Symbol	Parameter	Test Conditions		Value	Unit
$t_{rr}$	Reverse-recovery Time	$I_F=0.9A, I_R=1.5A$	TYP.	4	$\mu\text{s}$

**Static Characteristics**

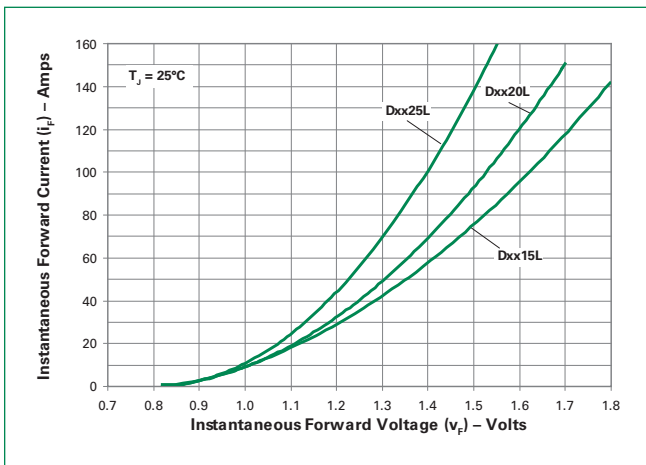
Symbol	Test Conditions		Value	Unit		
$V_{FM}$	15A Device $I_T = 30A; t_p = 380\mu\text{s}$		MAX.	1.6	V	
	20A Device $I_T = 40A; t_p = 380\mu\text{s}$					
	25A Device $I_T = 50A; t_p = 380\mu\text{s}$					
$I_{RM}$	$V_{RRM}$	$T_J = 25^\circ\text{C}$	MAX.	400-600V	10	$\mu\text{A}$
				800-1000V	20	
		$T_J = 100^\circ\text{C}$		400-800V	500	
				1000V	3000	
		$T_J = 125^\circ\text{C}$		400-800V	1000	

**Thermal Resistances**

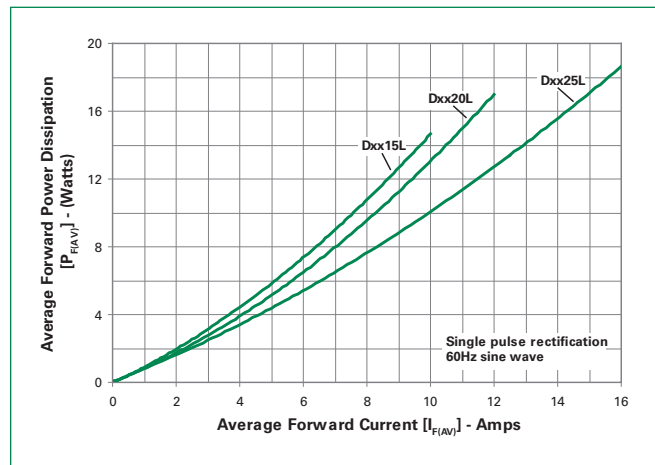
Symbol	Parameter	Value	Unit
$R_{\theta(J-C)}$	Junction to case (AC)	Dxx15L	2.85
		Dxx20L	2.55
		Dxx25L	2.50

Note: xx = voltage

**Figure 1: On-State Current vs. On-State Voltage (Typical)**



**Figure 2: Power Dissipation vs. RMS On-State Current (Typical)**



**Physical Specifications**

<b>Terminal Finish</b>	100% Matte Tin Plated
<b>Body Material</b>	UL recognized epoxy meeting flammability classification 94V-0
<b>Lead Material</b>	Copper Alloy

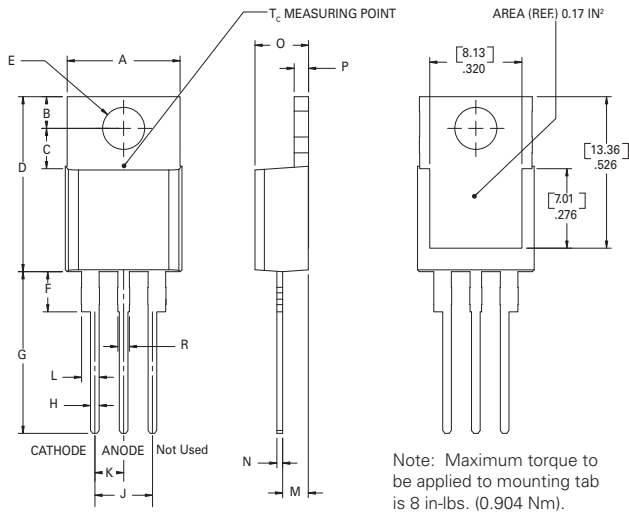
**Design Considerations**

Careful selection of the correct device for the application's operating parameters and environment will go a long way toward extending the operating life of the rectifier. Good design practice should limit the maximum continuous current through the main terminals to 75% of the device rating. Other ways to ensure long life for a power discrete semiconductor are proper heat sinking and selection of voltage ratings for worst case conditions. Overheating, overvoltage (including dv/dt), and surge currents are the main killers of semiconductors. Correct mounting, soldering, and forming of the leads also help protect against component damage.

**Environmental Specifications**

Test	Specifications and Conditions
<b>High Temperature Voltage Blocking</b>	MIL-STD-750: Method 1040, Condition A Rated $V_{RRM}$ , 125°C, 1008 hours
<b>Temperature Cycling</b>	MIL-STD-750: Method 1051 -40°C to 150°C, 15-minute dwell, 100 cycles
<b>Biased Temperature &amp; Humidity</b>	EIA/JEDEC: JESD22-A101 320VDC, 85°C, 85%RH, 1008 hours
<b>High Temp Storage</b>	MIL-STD-750: Method 1031 150°C, 1008 hours
<b>Low-Temp Storage</b>	1008 hours; -40°C
<b>Thermal Shock</b>	MIL-STD-750: Method 1056 0°C to 100°C, 5-minute dwell, 10-second transfer, 10 cycles
<b>Autoclave (Pressure Cooker Test)</b>	EIA/JEDEC: JESD22-A102 121°C, 100%RH, 2atm, 168 hours
<b>Resistance to Solder Heat</b>	MIL-STD-750: Method 2031 260°C, 10 seconds
<b>Solderability</b>	ANSI/J-STD-002, Category 3, Test A
<b>Lead Bend</b>	MIL-STD-750: Method 2036, Condition E

**Dimensions — TO-220AB (L-Package) — Isolated Mounting Tab**



Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.380	0.420	9.65	10.67
B	0.105	0.115	2.67	2.92
C	0.230	0.250	5.84	6.35
D	0.590	0.620	14.99	15.75
E	0.142	0.147	3.61	3.73
F	0.110	0.130	2.79	3.30
G	0.540	0.575	13.72	14.61
H	0.025	0.035	0.64	0.89
J	0.195	0.205	4.95	5.21
K	0.095	0.105	2.41	2.67
L	0.060	0.075	1.52	1.91
M	0.085	0.095	2.16	2.41
N	0.018	0.024	0.46	0.61
O	0.178	0.188	4.52	4.78
P	0.045	0.060	1.14	1.52
R	0.038	0.048	0.97	1.22

**Product Selector**

Part Number	Voltage				Type	Package
	400V	600V	800V	1000V		
Dxx15L	X	X	X	X	Rectifier	TO-220L
Dxx20L	X	X	X	X	Rectifier	TO-220L
Dxx25L	X	X	X	X	Rectifier	TO-220L

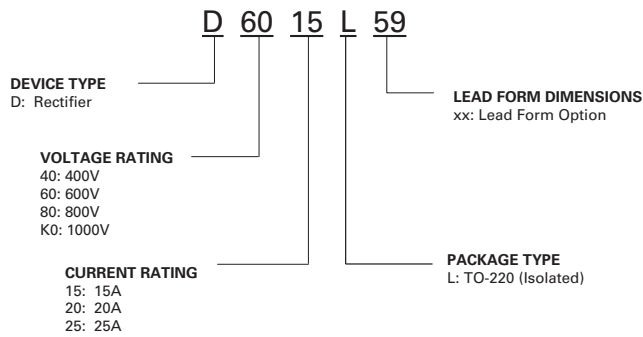
Note: xx = Voltage

**Packing Options**

Part Number	Marking	Weight	Packing Mode	Base Quantity
Dxx15L	Dxx15L	2.2 g	Bulk	500
Dxx15LTP	Dxx15L	2.2 g	Tube	500
Dxx20L	Dxx20L	2.2 g	Bulk	500
Dxx20LTP	Dxx20L	2.2 g	Tube	500
Dxx25L	Dxx25L	2.2 g	Bulk	500
Dxx25LTP	Dxx25L	2.2 g	Tube	500

Note: xx = Voltage

**Part Numbering System**



**Part Marking System**

TO-220AB (L Package)

