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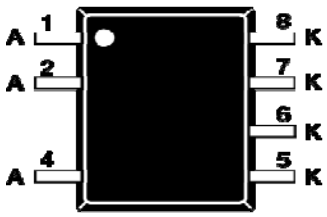
LXA03D530
Qspeed™ Family

530 V, 3 A X-Series Diode

Product Summary

$I_{F(AVG)}$	3	A
V_{RRM}	530	V
Q_{RR} (Typ at 125 °C)	75	nC
I_{RRM} (Typ at 125 °C)	3.2	A
Softness t_B/t_A (Typ at 125 °C)	0.34	

Pin Assignment



D Package (SO-8C)

LXA03D530

RoHS Compliant

Package uses lead-free plating and green mold compound.
Halogen-free per IEC 61249-2-21.

General Description

This device is an extremely low reverse recovery 530 V silicon diode. Its recovery characteristics increase efficiency, reduce EMI and eliminate snubbers.

Applications

- High-voltage power rectifier
- Power factor correction (PFC) boost diode
- Motor drive circuits
- DC-AC inverters

Features

- Low Q_{RR}, low I_{RRM}, low t_{RR}
- High dI_F/dt capable
- Soft recovery

Benefits

- Reduces peak reverse voltage
- Increases efficiency
  - Eliminates need for snubber circuits
  - Reduces EMI filter component size & count
- Enables extremely fast switching

Absolute Maximum Ratings

Absolute maximum ratings are the values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Symbol	Parameter	Conditions	Rating	Units
V_{RRM}	Peak repetitive reverse voltage	T_J = 25 °C	530	V
$I_{F(AVG)}$	Average forward current	T_J = 150 °C, T_L = 29 °C	3	A
I_{FSM}	Non-repetitive peak surge current	60 Hz, ½ cycle, T_C = 25 °C	25	A
I_{FSM}	Non-repetitive peak surge current	½ cycle of t = 28 µs Sinusoid, T_C = 25 °C	350	A
$T_{J(MAX)}$	Maximum junction temperature		150	°C
T_{STG}	Storage temperature		–55 to 150	°C
P_D	Power dissipation	T_L = 25 °C	4.6	W

Thermal Resistance

Symbol	Resistance	Conditions	Rating	Units
$R_{\theta JA}$	Junction to ambient	Soldered to 1 sq. in. (645 mm^2), 2 oz. Cu.	80	°C/W
$R_{\theta JL}$	Junction to lead	Lead temperature measured on pin 7	27	°C/W

Electrical Specifications at T_J = 25 °C (unless otherwise specified)

Symbol	Parameter	Conditions		Min	Typ	Max	Units
DC Characteristics							
I_R	Reverse current	V_R = 530 V, T_J = 25 °C		-	0.4	250	µA
		V_R = 530 V, T_J = 125 °C		-	0.275	-	mA
V_F	Forward voltage	I_F = 3 A, T_J = 25 °C		-	1.55	1.71	V
		I_F = 3 A, T_J = 150 °C		-	1.33	-	V
C_J	Junction capacitance	V_R = 10 V, 1 MHz		-	15	-	pF
Dynamic Characteristics							
t_{RR}	Reverse recovery time	dI/dt = 200 A/µs, V_R= 400 V, I_F= 3 A	T_J= 25 °C	-	25	34.3	ns
			T_J= 125 °C	-	33	-	ns
Q_{RR}	Reverse recovery charge	dI/dt = 200 A/µs, V_R= 400 V, I_F= 3 A	T_J= 25 °C	-	39	55	nC
			T_J= 125 °C	-	75	-	nC
I_{RRM}	Maximum reverse recovery current	dI/dt = 200 A/µs, V_R= 400 V, I_F= 3 A	T_J= 25 °C	-	2.2	-	A
			T_J= 125 °C	-	3.2	-	A
S	Softness factor = $\frac{t_B}{t_A}$	dI/dt = 200 A/µs, V_R= 400 V, I_F= 3 A	T_J= 25 °C	-	0.7	-	
			T_J= 125 °C	-	0.34	-	

Note to component engineers: X-Series diodes employ Schottky technologies in their design and construction. Therefore, component engineers should plan their test setups to be similar to those for traditional Schottky test set-ups. (For additional details, see Application Note AN-300.)

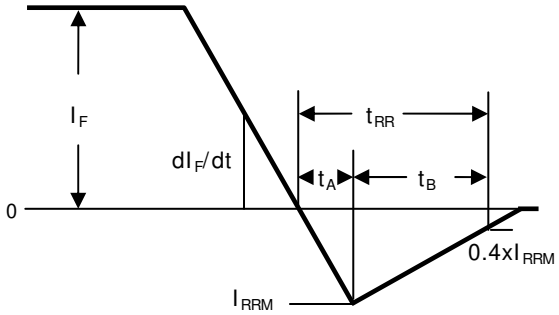


Figure 1. Reverse Recovery Definitions.

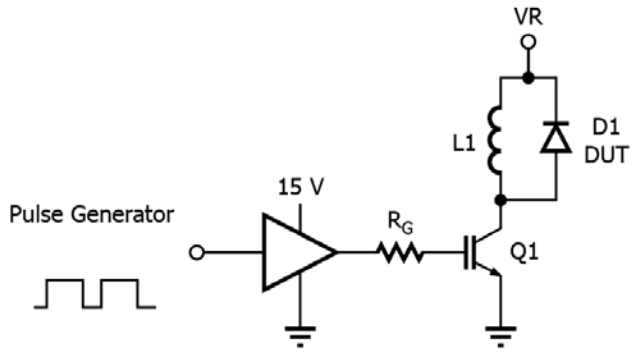


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Figure 2. Reverse Recovery Test Circuit.

Electrical Specifications at T_J = 25 °C (unless otherwise specified)

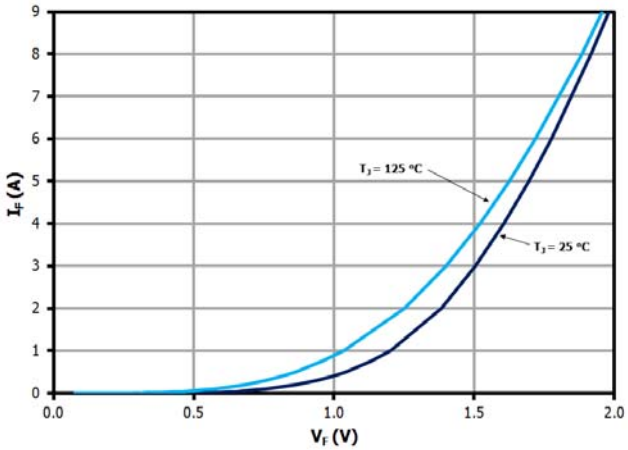


Figure 3. Typical I_F vs. V_F.

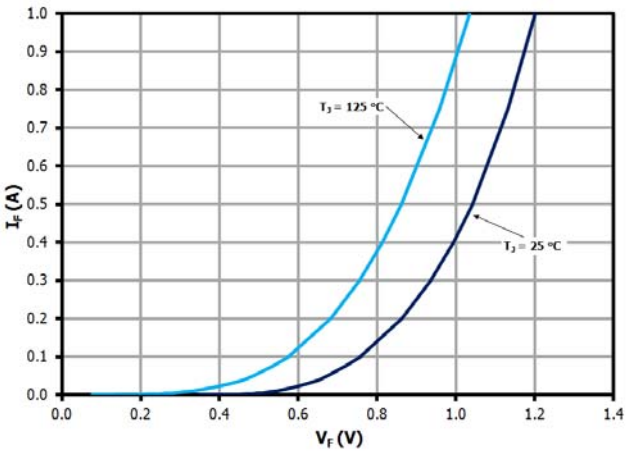


Figure 4. Typical I_F vs. V_F.

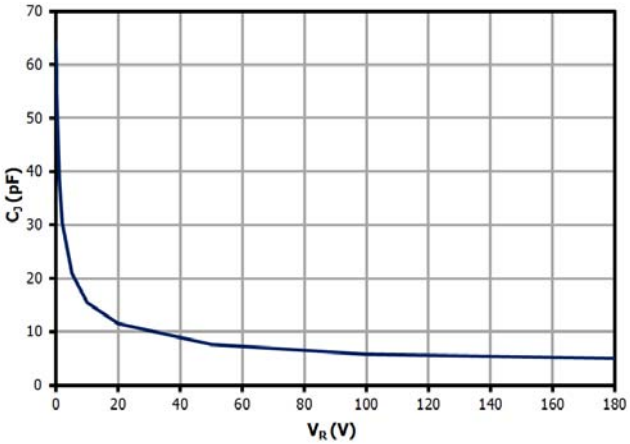


Figure 5. Typical C_J vs. V_R.

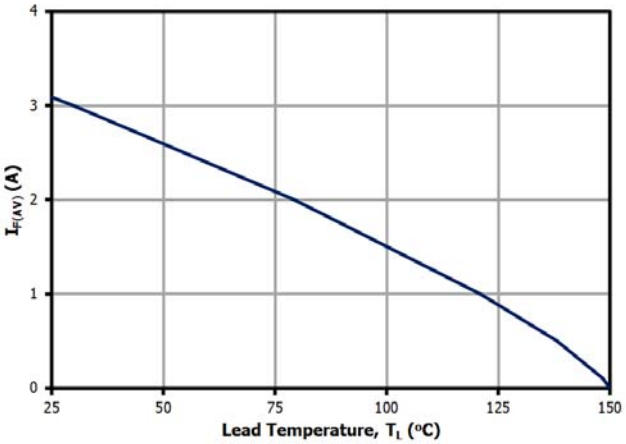


Figure 6. DC Current Derating Curve.

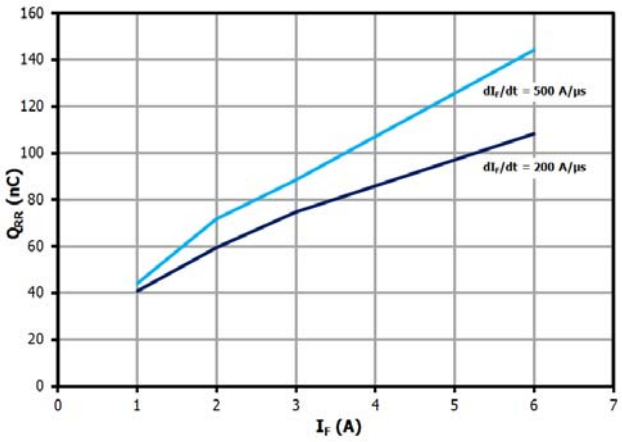


Figure 7. Typical Q_{RR} vs. I_F at T_J = 125 °C.

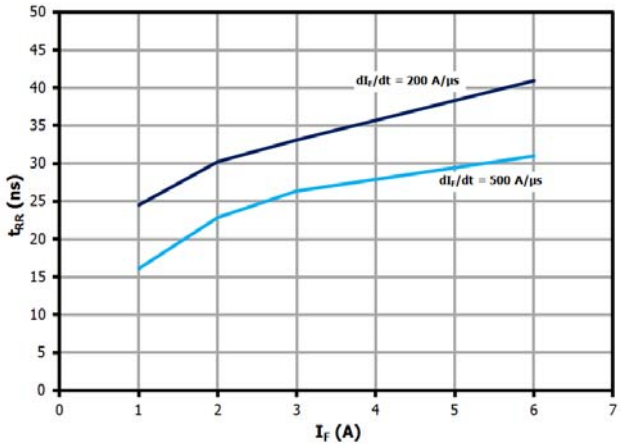


Figure 8. Typical t_{RR} vs. I_F at T_J = 125 °C.

Electrical Specifications at T_J = 25 °C (unless otherwise specified)

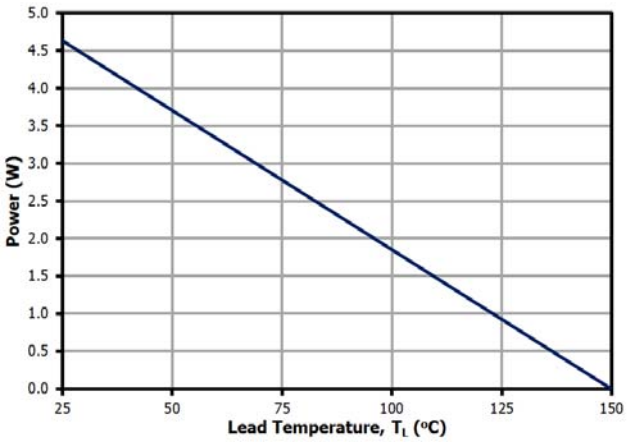


Figure 9. Power Derating Curve.

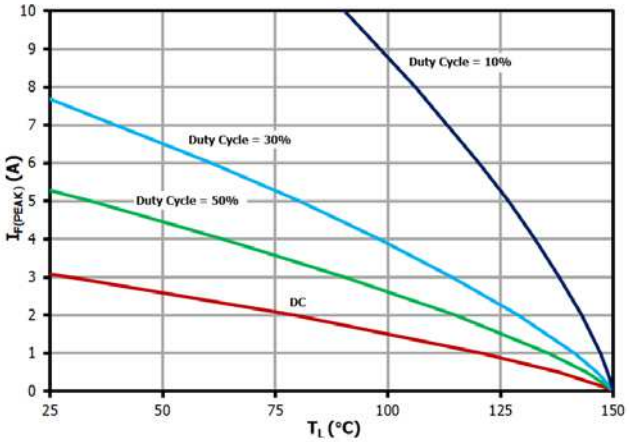


Figure 10. I_F (Peak) vs. T_L, f = 70 kHz.

LXA03D530

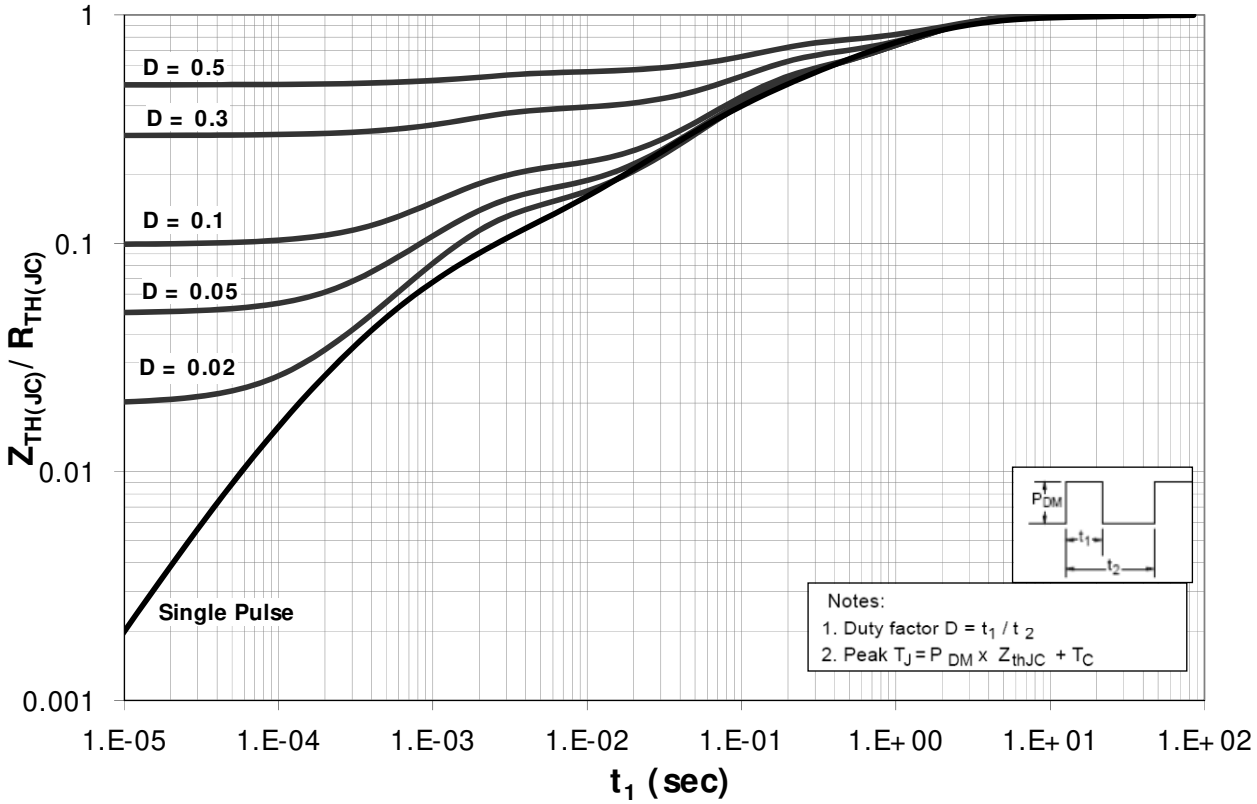
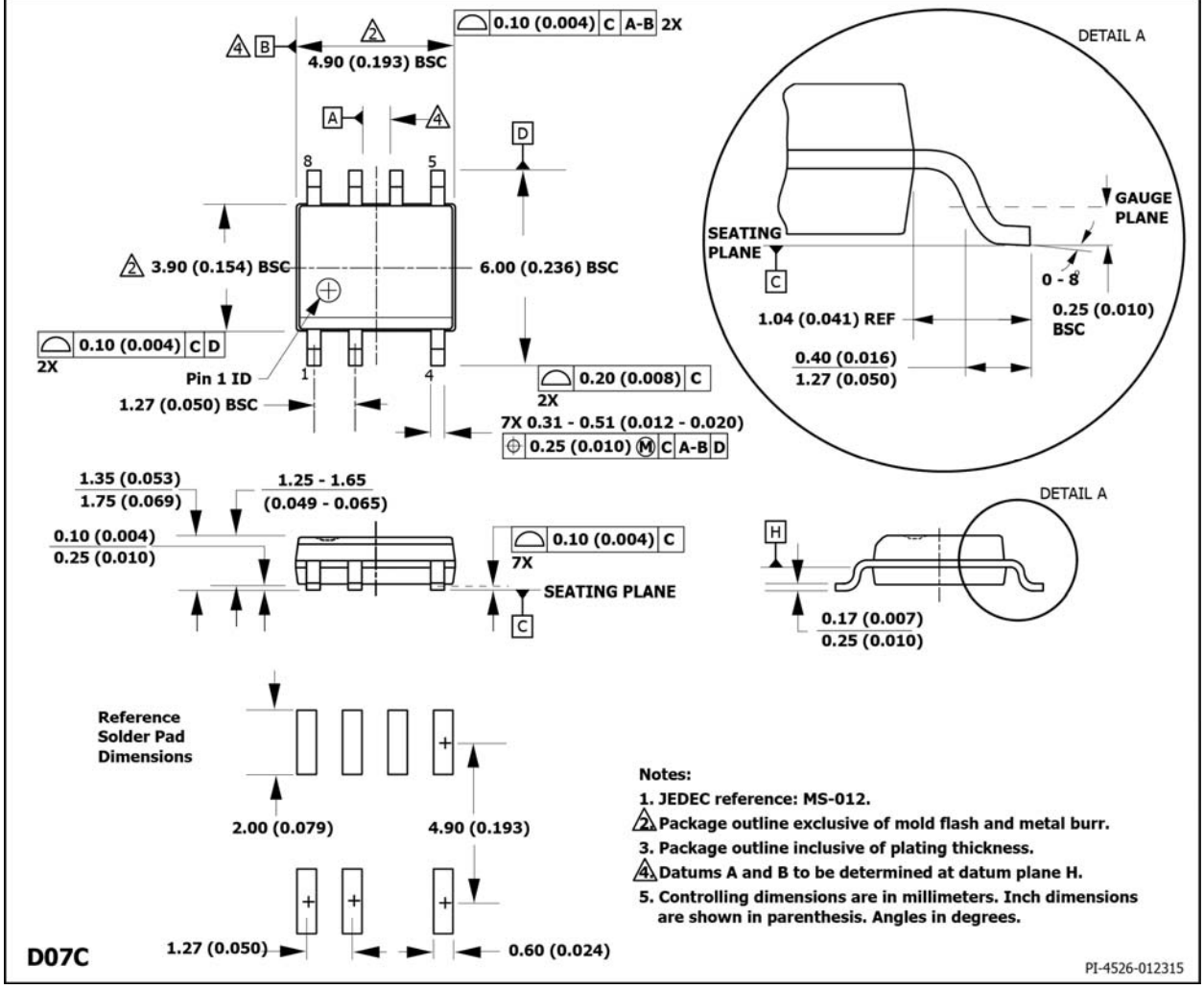


Figure 11. Normalized Maximum Transient Thermal Impedance.

SO-8C (D Package)



Notes:

1. JEDEC reference: MS-012.
2. Package outline exclusive of mold flash and metal burr.
3. Package outline inclusive of plating thickness.
4. Datums A and B to be determined at datum plane H.
5. Controlling dimensions are in millimeters. Inch dimensions are shown in parenthesis. Angles in degrees.

Ordering Information

Part Number	Package	Packing
LXA03D530	SO-8C	2500 units/reel

The information contained in this document is subject to change without notice.

Revision	Notes	Date
1.0	Initial Release.	04/15

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