RoHS
Available on commercial versions

Thinkey™ Silicon Schottky Diode

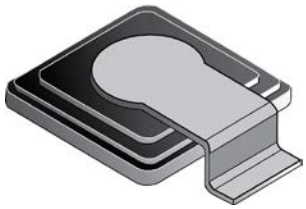
Qualified per MIL-PRF-19500/726

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This Defense Logistics Agency (DLA) qualified Schottky diodes offer great value for aerospace and defense applications requiring high density power and excellent heat dissipation (typically 0.25 – 0.35 degrees C per Watt (C/W)). The 1N6940UTK3AS through 1N6942UTK3AS device polarity is anode-to-strap (standard) and is also available optionally in 1N6940UTK3CS through 1N6942UTK3CS as cathode-to-strap. This part can also be ordered in a strapless version. Up-screening for high-reliability applications is also available. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

Important: For the latest information, visit our website http://www.microsemi.com.



ThinKey™ 3 Package

FEATURES

- JEDEC registered 1N6940 – 1N6942 number series.
- Oxide passivated structure.
- Guard ring protection for increased reverse energy capability.
- Epitaxial structure minimizes forward voltage drop.
- Hermetically sealed, low profile ceramic surface mount power package.
- JAN, JANTX, and JANTXV qualifications are available per MIL-PRF-19500/726. (See part nomenclature for all available options).
- RoHS compliant versions available (commercial grade only).

APPLICATIONS / BENEFITS

- Low package inductance.
- Very low thermal resistance.
- Also available with no strap as 1N6940UTK3, 1N6941UTK3 and 1N6942UTK3 by special request.
- Rugged ceramic and metal construction with no wire bonds.
- High surge capabilities and enable double-side cooling.

MAXIMUM RATINGS @ T_C = +25 °C, unless otherwise noted

Parameters / Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature Range	T_j and T_{stg}	-65 to +150	°C
Thermal Resistance Junction to Case (Anode-to-Strap)	$R_{\Theta JC}$	0.25	°C/W
Thermal Resistance Junction to Case (Cathode-to-Strap) (Also applicable to strapless option)	$R_{\Theta JC}$	0.35	°C/W
Working Peak Reverse Voltage: 1N6940UTK3,CS,AS 1N6941UTK3,CS,AS 1N6942UTK3,CS,AS	V_{RWM}	15 30 45	V
Average Rectified Output Current, T_C = +100 °C	I_O	150	A
Non-repetitive Peak Surge Current (tp = 8.3 ms, half sine-wave)	I_{FSM}	2000	A (pk)

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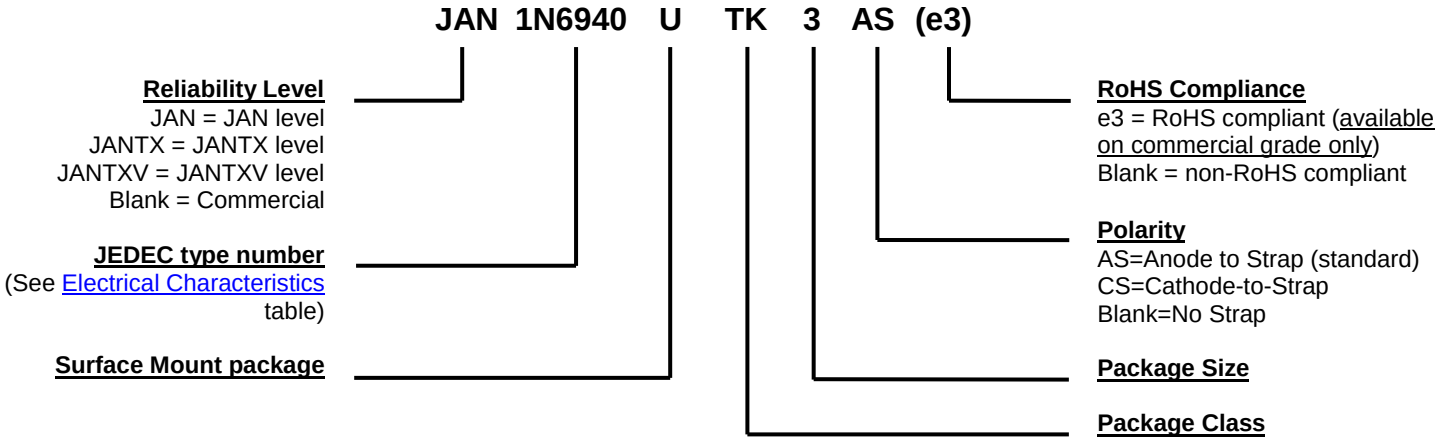
Website:
www.microsemi.com

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MECHANICAL and PACKAGING

- CASE: Ceramic-molybdenum Thinkey 3.
- TERMINALS: Tin/lead solder or RoHS compliant matte/tin (on commercial grade only) plating.
- MARKING: Part number and polarity symbol.
- POLARITY: Standard is anode to strap. Reverse is cathode to strap.
- WEIGHT: Approximately 1.7 grams.
- See package dimensions on page 4.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
f	frequency
I_F	Forward current, dc
I_R	Reverse current, dc
T_C	Case temperature
t_p	Pulse time
V_R	Reverse Voltage, dc

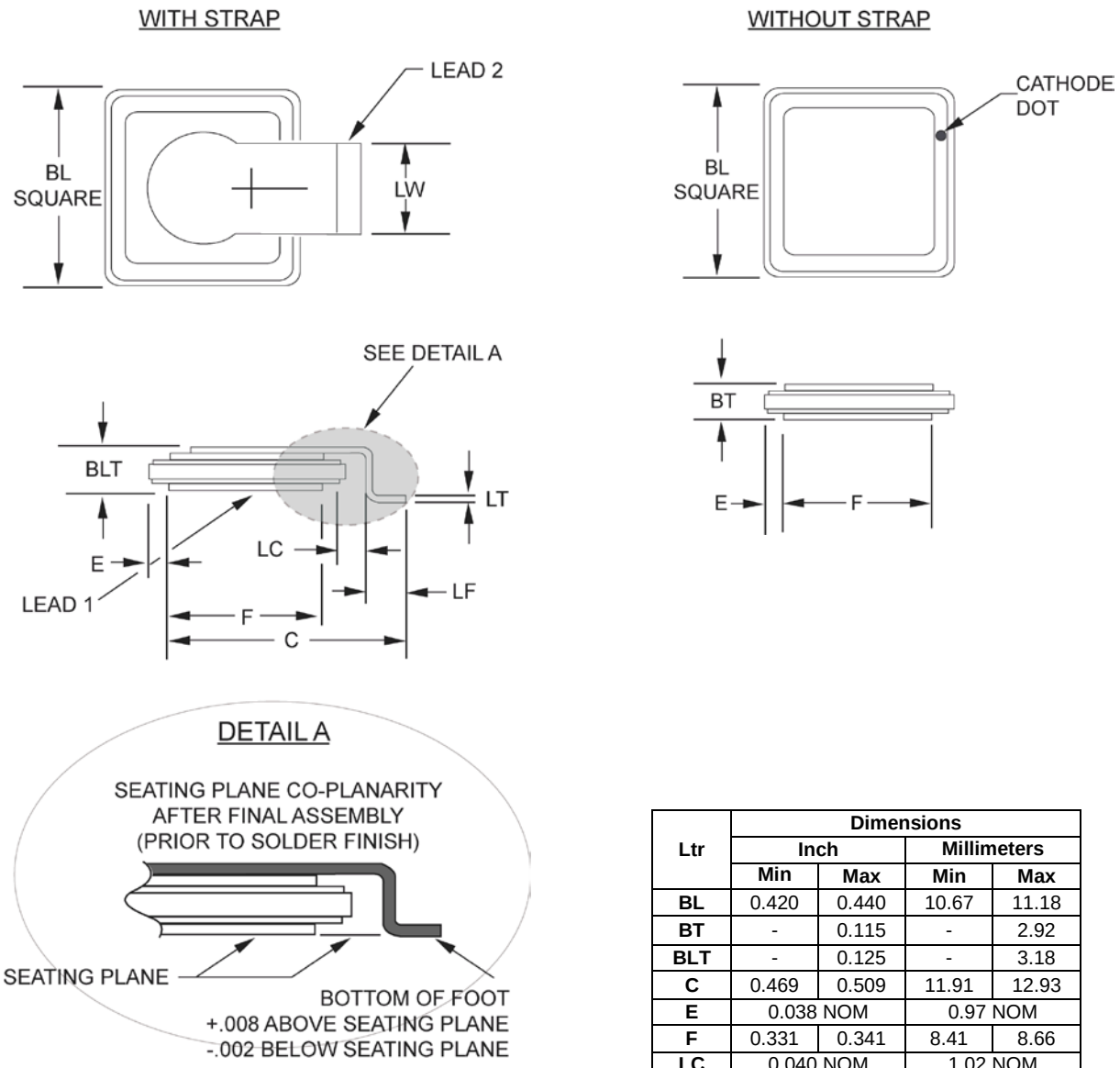
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ELECTRICAL CHARACTERISTICS @ T_A = +25 °C, unless otherwise noted

Parameters / Test Conditions		Symbol	MIN	MAX	Unit
Reverse (Leakage) Current					
V_R = 15 V, Tc = 25 °C	1N6940UTK3, CS, AS				
V_R = 30 V, Tc = 25 °C	1N6941UTK3, CS, AS	I_{R1}		5.0	mA
V_R = 45 V, Tc = 25 °C	1N6942UTK3, CS, AS				
V_R = 15 V, Tc = +125 °C	1N6940UTK3, CS, AS			1,200	
V_R = 30 V, Tc = +125 °C	1N6941UTK3, CS, AS	I_{R2}		1,200	mA
V_R = 30 V, Tc = +125 °C	1N6942UTK3, CS, AS			500	
V_R = 45 V, Tc = +125 °C	1N6942UTK3, CS, AS	I_{R3}		1,500	mA
Forward Voltage					
Pulse test, pulse width tp = 300 μs					
I_F = 75 A (pk), T_C = +25 °C	1N6940UTK3, CS, AS			0.43	
I_F = 25 A (pk), T_C = +25 °C	1N6941UTK3, CS, AS	V_{F1}		0.42	V
I_F = 25 A (pk), T_C = +25 °C	1N6942UTK3, CS, AS			0.40	
I_F = 150 A (pk), T_C = +25 °C	1N6940UTK3, CS, AS			0.50	
I_F = 50 A (pk), T_C = +25 °C	1N6941UTK3, CS, AS	V_{F2}		0.50	V
I_F = 50 A (pk), T_C = +25 °C	1N6942UTK3, CS, AS			0.46	
I_F = 150 A (pk), T_C = +125 °C	1N6940UTK3, CS, AS			0.43	
I_F = 150 A (pk), T_C = +125 °C	1N6941UTK3, CS, AS	V_{F3}		0.50	V
I_F = 110 A (pk), T_C = +125 °C	1N6942UTK3, CS, AS			0.50	
I_F = 150 A (pk), T_C = +125 °C	1N6942UTK3, CS, AS	V_{F4}		0.57	V
Junction Capacitance	1N6940UTK3, CS, AS			10,000	
V_R = 5 V, f = 1 MHz, V_{SIG} = 50 mV (p-p)	1N6941UTK3, CS, AS	C_J		7,500	pF
	1N6942UTK3, CS, AS			7,000	
Breakdown Voltage					
Pulse test, tp = 35 ms					
	1N6940UTK3, CS, AS		16.5		
I_R = 50 mA (pk), T_C = 25 °C	1N6941UTK3, CS, AS	$V_{(BR)1}$	33		V
	1N6942UTK3, CS, AS		50		
	1N6940UTK3, CS, AS		15		
I_R = 50 mA (pk), T_C = -55 °C	1N6941UTK3, CS, AS	$V_{(BR)2}$	30		V
	1N6942UTK3, CS, AS		45		

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PACKAGE DIMENSIONS



Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
BL	0.420	0.440	10.67	11.18
BT	-	0.115	-	2.92
BLT	-	0.125	-	3.18
C	0.469	0.509	11.91	12.93
E	0.038 NOM		0.97 NOM	
F	0.331	0.341	8.41	8.66
LC	0.040 NOM		1.02 NOM	
LF	0.055	0.075	1.40	1.91
LT	0.005	0.015	0.127	0.381
LW	0.185	0.215	4.70	5.46

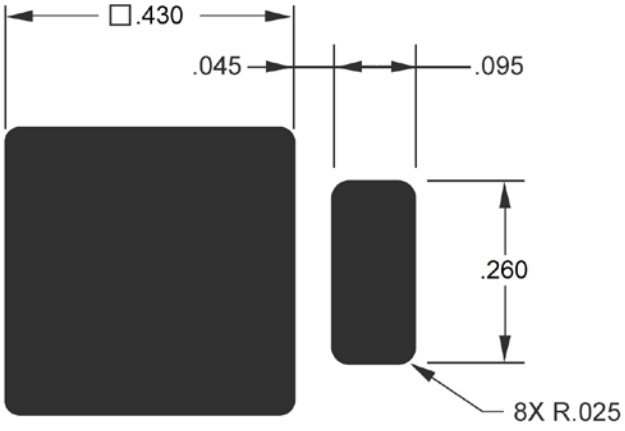
NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

SEE PAD LAYOUT ON NEXT PAGE.

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PAD LAYOUT



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