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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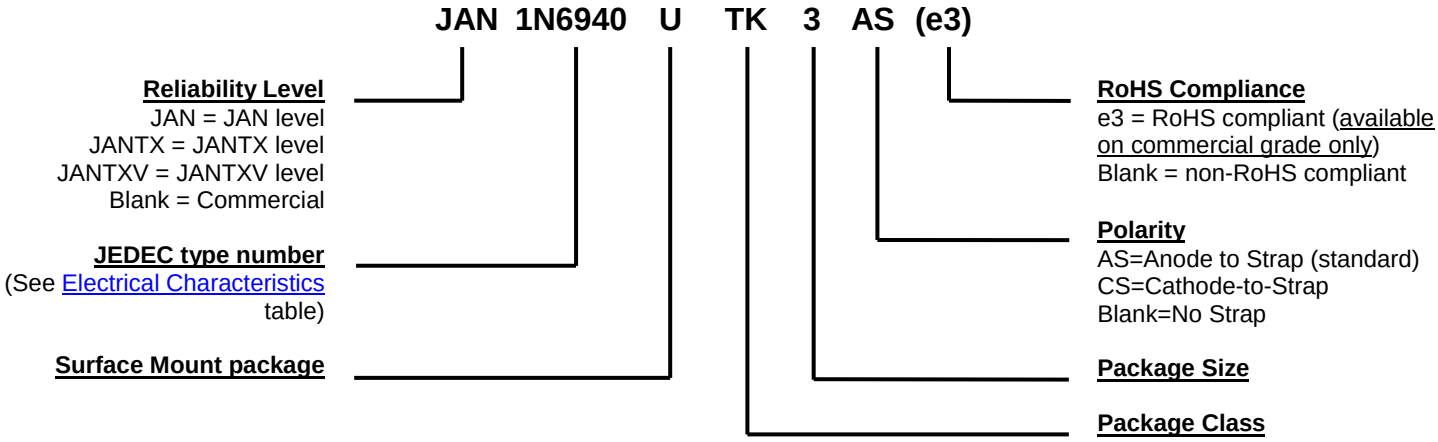
MECHANICAL and PACKAGING

- 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



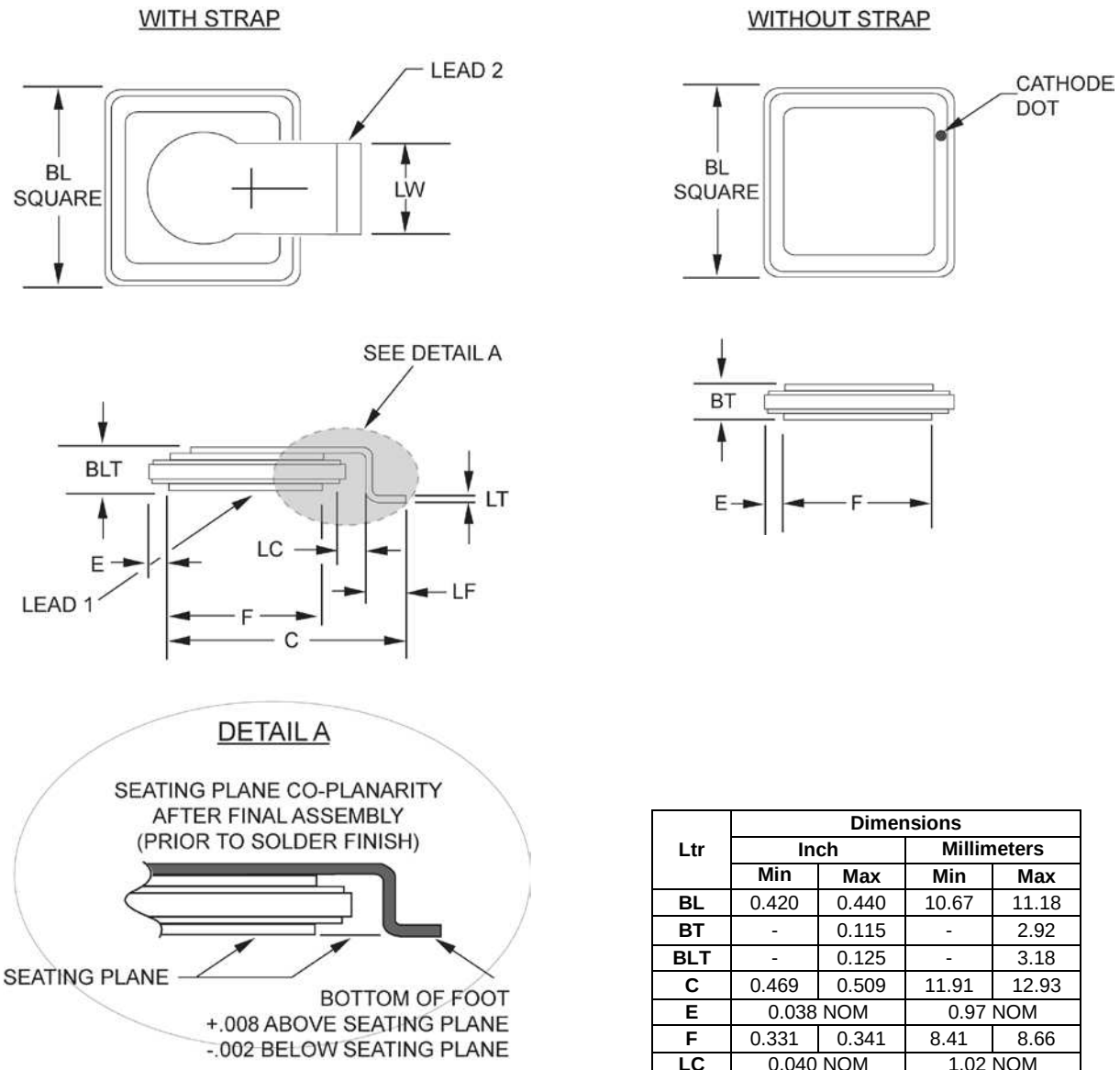
SYMBOLS & DEFINITIONS

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

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		

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.

PAD LAYOUT