



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>.

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 _{θJC}	0.25	°C/W
Thermal Resistance Junction to Case (Cathode-to-Strap) (Also applicable to strapless option)	R _{θJC}	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 (t _p = 8.3 ms, half sine-wave)	I _{FSM}	2000	A (pk)



**ThinKey™ 3
Package**

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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

JAN 1N6940 U TK 3 AS (e3)

Reliability Level

JAN = JAN level
JANTX = JANTX level
JANTXV = JANTXV level
Blank = Commercial

JEDEC type number

(See [Electrical Characteristics](#) table)

Surface Mount package
RoHS Compliance

e3 = RoHS compliant ([available on commercial grade only](#))
Blank = non-RoHS compliant

Polarity

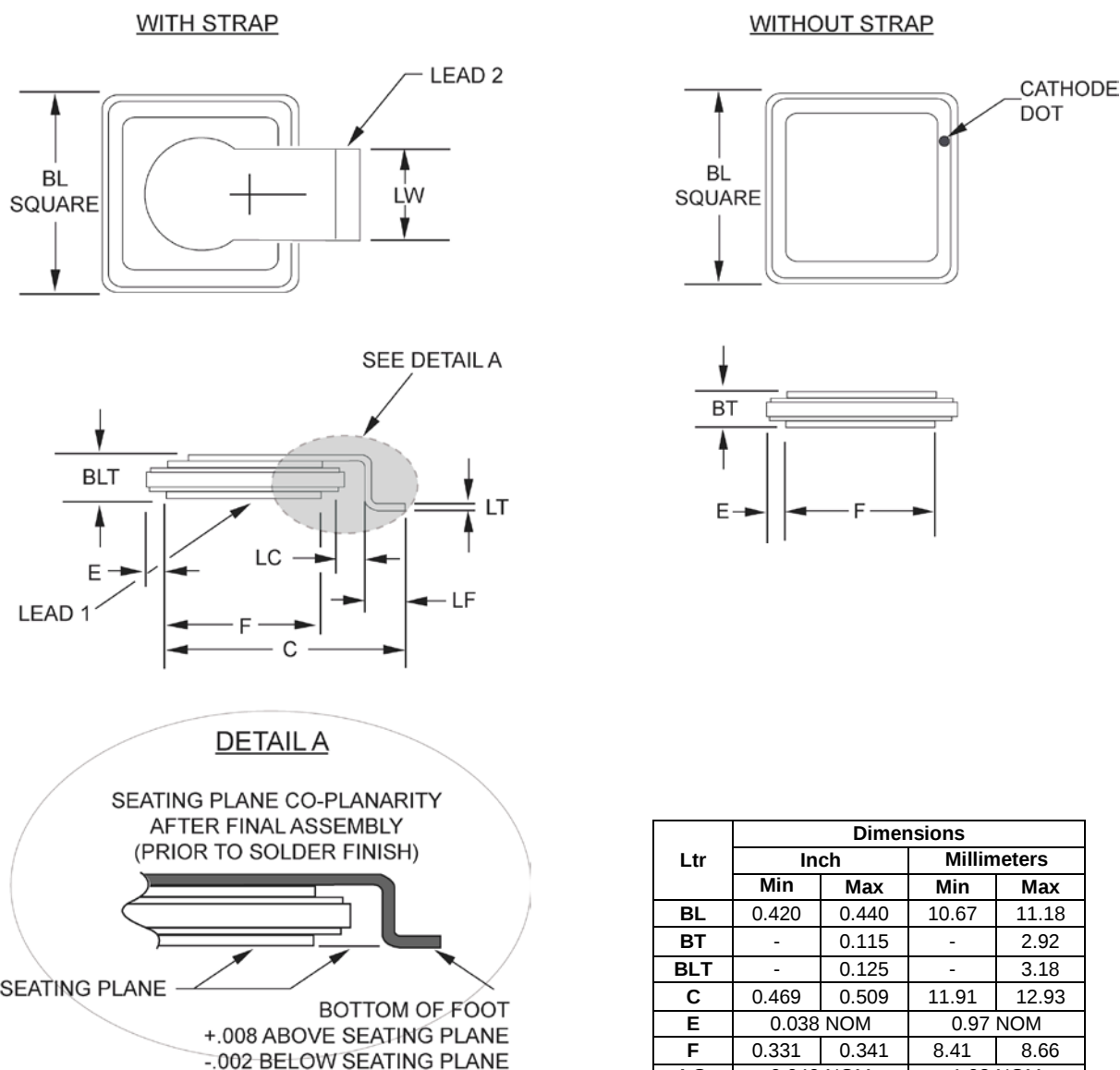
AS=Anode to Strap (standard)
CS=Cathode-to-Strap
Blank=No Strap

Package Size
Package Class
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 @ $T_A = +25\text{ }^{\circ}\text{C}$, unless otherwise noted

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

PACKAGE DIMENSIONS

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 Φ x symbology.

SEE PAD LAYOUT ON NEXT PAGE.

PAD LAYOUT

