

Product Name: TK13A25D

Package Name: TO-220SIS

### 1. Thermal tests

Test Item	Test Condition	Failure Size / Sample Size
Heat resistance (Flow)	Peak : 260 deg.C Immersion time : 10 s (Up to 1.5mm from the Root shall be immersed) Once	0 / 32
Heat resistance (Iron)	Temperature of the iron tip : 400 deg.C Time : 3 s Once	0 / 32
Temperature cycling	- 55 deg.C(30 min) to 150 deg.C(30 min) 100 cycles	0 / 50
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### 2. Mechanical tests

Test Item	Test Condition	Failure Size / Sample Size
Solderability	Solder bath : Sn-Ag-Cu 245 deg.C , 5 s ,once (using Flux) Solder bath : Sn-Pb 230 deg.C , 5 s ,once (using Flux)	0 / 11
Lead integrity	Weight = 10 N 0 deg. to 90 deg. to 0 deg. Bend , 3times	0 / 11
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-	-	-
-	-	-

### 3. Life tests

Test Item	Test Condition	Failure Size / Sample Size
Steady state operation	Ta = 25 deg.C, PD = 2.0W ,1000 h	0 / 30
High temp. reverse bias	Ta = 150 deg.C, VGS = 20V ,1000 h	0 / 30
High temp. storage	Ta = 150 deg.C ,1000 h	0 / 30
High temp. high humidity storage	Ta = 85 deg.C, RH = 85% ,1000 h	0 / 30
Pressure cooker test	Ta = 121 deg.C(203kPa)(Unsaturated) ,96 h	0 / 20
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The information contained in Reliability Test Report represents the result of our internal reliability tests conducted in accordance with JEITA ED-4701 test standards, and is provided for your reference only.

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For detailed reliability test information, such as test conditions and criteria, please contact your Toshiba sales representative.

## Estimated Failure Rate

Product Name	Estimated failure rate
TK13A25D	0.37 Fit or less

Above estimated value is determined with the standard operation under the general environment:\*

\*The general environment here means the conditions of  $T_j = 55$  degree C and no application of surge and so on.

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Product Name: TK13A25D  
Package Name: TO-220SIS

### 1.Flow

Number: Only once  
Solder temperature : 260 deg.C maximum  
Soldering time : Within 10 seconds  
Preheat : 150 deg.C , 60 to 120 seconds

NOTE: Apply up to stopper part or point 1.5 mm or more far from the body of device.

If the double-wave method is used, keep the total dwell time for a first bath and a second bath within 10 seconds.

Preheating conditions are based on the surface temperature of the PWB by the solder mounting side.

( When the PWB surface by the device side is preheated, its condition should not exceed the maximum storage temperature of a device. )

### 2.Others

We urge you to verify well before mounting to assure enough solder joint strength.

Always solder the Product in accordance with the heat-resistance mounting conditions set forth above. In the event the Product is soldered otherwise, the applicable product warranty, if any, is void.

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