

Product	MOSFET	Package	TO-252 (DPAK)
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1. TEST RESULT

TEST DESCRIPTION		TEST CONDITION	STANDARD	n [pcs]	Pn [pcs]
Soldering Heat Resistance	(1)	260±5°C , 10sec. , Reflow Soldering , 2 times	JESD22-A111	22	0
	(2)	260±5°C , 10sec. , Solder-Bath		22	0
	(3)	350±10°C , 3sec. , Hand Soldering		22	0
Solderability	(1)	245±5°C , 3sec. , Reflow Soldering	J-STD-002	22	0
	(2)	245±5°C , 3sec. , Solder-Bath	JESD22-B102	22	0
Thermal Shock		0°C ~ 100°C , 100cycles	-	22	0
Temperature Cycle		-55±5°C←→150±5°C , 200cycles	JESD22-A104	22	0
High Temp. High Humidity Reverse Bias		85±2°C , 85±5%RH, Specified Bias ,1000hours	JESD22-A101	22	0
Pressure Cooker Test		121±2°C , 100%RH , 203kPa , 100hours	JESD22-A102	22	0
Load Life		25°C , P _D =P _D max. , 1000hours	-	22	0
High Temperature Reverse Bias		T _a =T _{stg} max. , Specified Bias , 1000hours	JESD22-A108	22	0
High Temperature Storage		T _{stg} max. , 1000hours	-	22	0
Low Temperature Storage		T _{stg} min. , 1000hours	-	22	0
Lead strength (lead pull)		Sample body fixed, pulling lead axis direction, 10N , 10±1sec.	JEITA ED-4701/400 Test Method 401	22	0
Intermittent Operation Life		T _a =25°C±5°C , ON 130sec /OFF 230sec, P _c max., 10,000 cycles	EIAJ ED-4701/100 Test Method 106	22	0

2. CRITERIA

ITEM	CONDITION	CRITERIA	
Gate-Source Leakage : I _{GSS}	Per specification	Within two times of the standard value.	
Zero Gate Voltage Drain Current : I _{DSS}	Per specification	Within two times of the standard value.	
Forward Transfer Admittance : Y _{fs}	Per specification	Changing rate of ±20%	
Physical	Visual check	No outstanding change in physical.	
Solderability	Visual check	Reflow Soldering	Immersed surface, other than the end of pin as cut-surface, must be covered by solder.
		Solder-Bath	More than 95% of the electrode must be covered with solder.

3. JUDGEMENT

No failure is observed from each test item.

4. TEST DESCRIPTION

TEST DESCRIPTION		TEST CONDITION	CRITERIA
1. Soldering Heat Resistance *4	(1)	1) Reflow Soldering, 260±5°C(peak) , 10 sec. , 2 times 2) After reflow soldering, leave at room temp. for more than 2h.	• Shall be no mechanical damage. • See (*1) for criteria on electrical characteristics.
	(2) *3	1) Dip the leads once into solder bath til the point 1.5mm from the package body. 260±5°C, 10±1sec Solder : Sn-3Ag-0.5Cu (Lead free) 2) After dipping, leave at room temp. for more than 2h.	• Shall be no mechanical damage. • See (*1) for criteria on electrical characteristics.
	(3)	1) Hand Soldering, 350±10°C , 3sec. 2) After testing, leave at room temp. for more than 2h.	• Shall be no mechanical damage. • See (*1) for criteria on electrical characteristics.
2. Solderability *5	(1)	1) Reflow Soldering, 245±5°C(peak) , 3sec. Solder : Sn-3Ag-0.5Cu (Lead free)	• Immersed surface, other than the end of pin as cut-surface, must be covered by solder.
	(2) *3	Immerse the leads into flux once til the point 1.5mm from the package body for 10s, Then into solder bath of 245±5°C til the point 1.5mm from the package body for 3±0.5s. Thereafter leave for natural dry at room temp. then wash off flux in 2-propanol. Solder : Sn-3Ag-0.5Cu (lead free) Flux : 2-propanol (IPA) (rosin 25wt%)	At least 95% of immersed surface, other than the end of pin as cut-surface, of must be covered by solder, which is observed through 10~20X magnifying glass.
3. Thermal Shock *6		1) Temp. & Time (Change within 10 sec.) 95~100°C (Liquid) , 5min ↔ 0~5°C (Liquid) , 5min 2) Freq. 100cycles. After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
4. Temperature Cycle *6		1) Temp. & Time (Change within 5 sec.) 55°C (air) , 30min ↔ 150°C (air) , 30min 2) Freq. 200cycles. After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
5. High Temp. High Humidity Reverse Bias *6		1) Ta=85±3°C, RH=75~90%、Time : 1000h 2) See (*2) for the THB bias. 3) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
6. Pressure Cooker Test *6		1) Ta=121°C, 100%RH, P=203KPa [2atm] 2) Time : 100h 3) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
7. Load Life *6		1) Ta=25±5°C, P _D /P _D (max), Time : 1000h 2) See (*2) for the THB bias. 3) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
8. High Temperature Reverse Bias *6		1) Ta=Tstg(max)±2°C, Time : 1000h 2) See (*2) for the THB bias. 3) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
9. High Temperature Storage		1) Ta=Tstg(max), Time : 1000h 2) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
10. Low Temperature Storage		1) Ta=Tstg(min), Time : 1000h 2) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.
11. Lead Strength (Lead Pull)		The sample body is fixed, and keep pulling the lead in lead axis direction with specified load for 10±1s.	Shall be no mechanical damage, detachment, extension between the lead and the package body.
12. Intermittent Operation Life		1) Ta=25±5°C, ON 130s/OFF 230s add P _c (max.). Time: 10,000 cycles, See (*2) for the LL bias. 3) After completion of test, leave at room temp. for more than 2h.	See (*1) for criteria on electrical characteristics.

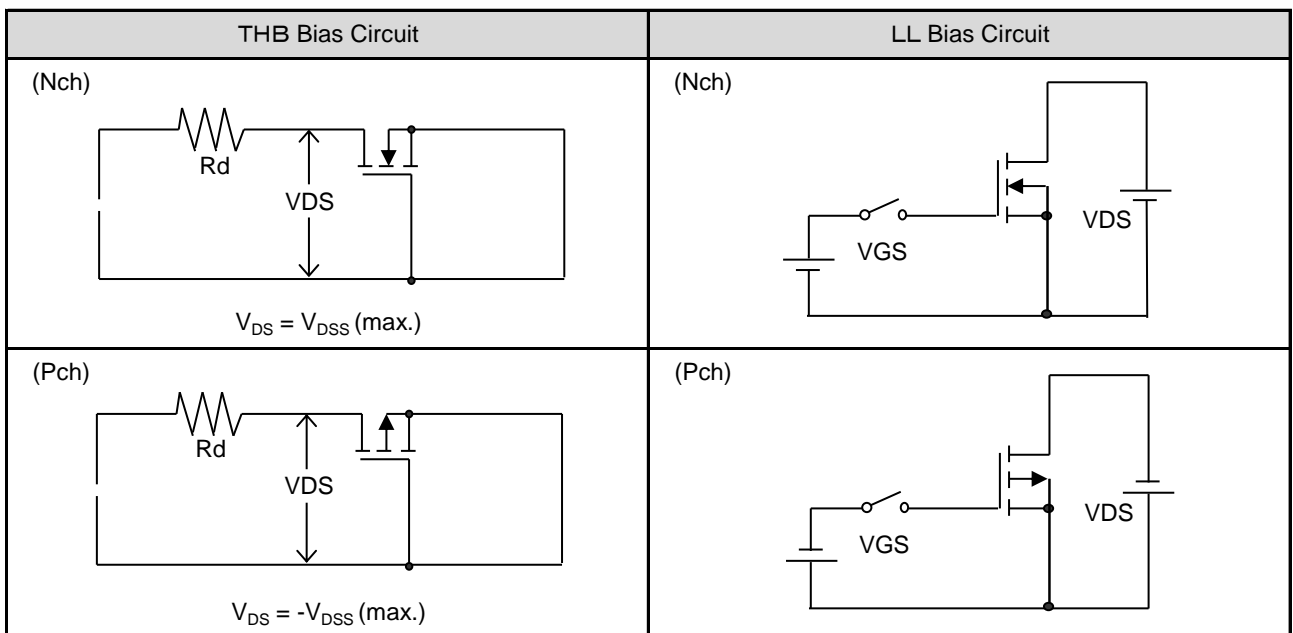
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5.REMARK

*1 Criteria for electrical characteristics.

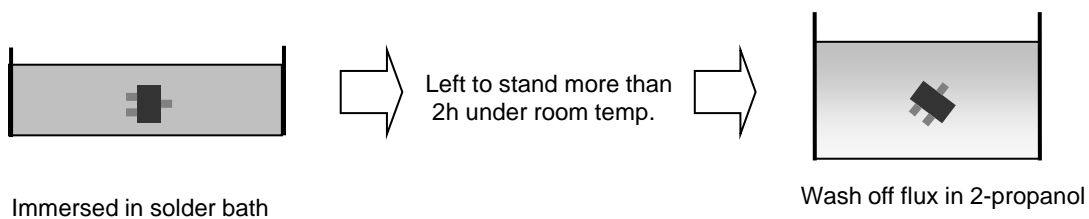
MOSFET
<ul style="list-style-type: none"> • $I_{DSS} > \text{Standard} \times 2$ • $I_{GSS} > \text{Standard} \times 2$ • $\frac{\Delta Y_{fs}}{Y_{fs}} > \pm 20\%$

*2 Bias Circuit



Bias for Power devices may be reduced as per individual specification.

*3 Method of test 1, test 2



*4 Preconditioning : The test is carried out after it is left under the high temperature and the high humidity.(85°C,85%,168h)

*5 Preconditioning : Aging is done with the PCT device. (105°C,100%,1.22x10⁵Pa,4h)

*6 Preconditioning : Soldering heat resistance(260°C,10s) is carried out. (Reflow Soldering)

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