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Notification of Product/Process Change

Doc. No.: 3022008

This letter intends as a formal notification of change to products which are currently supplied by ROHM Co., Ltd.

ROHM Co., Ltd. requires customers to provide acknowledgment of the receipt of this notification within 30 days from the date of this notice. Lack of acknowledgment of this notice within 30 days is considered as acceptance of the change.

After acknowledgement of the customer, lack of additional response within 90 day period constitutes acceptance of the change according to JEDEC Standard J-STD-046.

Your understanding and cooperation would be highly appreciated.

Issue Date: September 1, 2022

Title of change	PowerTransistor_Material change(organic film) and Addition of Shiga Factory for High Voltage MOSFET.	
Identification of change	We can trace from Lot history.	
Affected product(s)	Manufacturer part number	Customer part number
	R60xxENx、R60xxKNx、60xxJNx Series	
Detailed description of change	Before	After
	Factory:RohmApollo Chikugo Organic Film:Polyimide	Factory:RohmApollo Chikugo and Rohm Shiga Factory Organic Film:Polyimide
Reason for change	This transfer will increase production capacity and stabilize production which contribute to BCP, and the organic thin film materials contain an environmental regulation.	
Anticipated impact on form, fit, function, quality or reliability	Ensure that the characteristics areequal to existing products.	
Planned first ship date	Sep,1,2023	
Qualification plan schedule, results and samples	If required, please contact the local ROHM sales office or the authorized distributor.	
Comments		
Supplier contact	Please contact the local ROHM sales office or the authorized distributor.	
Notes		

信頼性試験結果 Reliability Test Result		ローム株式会社 パワートランジスタ事業部 ROHM Co., Ltd. Power Transistor Division	
作成日(DATE)	2022年6月30日 30-Jun-22	品名(product)	MOS
管理No.(Serial No.)	3022008	形名，PKG(Type)	R6020ENX(TO-220FM)

1. 試験結果(TEST RESULT)

試験項目 (TEST ITEM)	試験条件 (TEST CONDITION)	準拠規格 (STANDARD)	n[pcs] (Sample QTY.)	Pn[pcs] (NG QTY.)
温度サイクル Temperature cycle	-55±5℃←→150±5℃　100サイクル -55±5℃←→150±5℃　100cycles	JESD22-A104	22	0
高温高湿逆バイアス High temp. high humidity reverse bias	85±2℃, 85±5%RH, 規定のバイアス, 1000時間 85±2℃, 85±5%RH, specified bias ,1000hours	JESD22-A101	22	0
飽和蒸気加圧　PCT Pressure cooker test	121±2℃ , 100%RH , 203kPa , 100時間 121±2℃ , 100%RH , 203kPa , 100hours	JESD22-A102	22	0
高温逆バイアス High temperature reverse bias	Ta=Tstg max, 規定のバイアス、1000時間 Ta=Tstg max., specified bias , 1000hours	JESD22-A108	22	0
高温ゲートバイアス High temperature gate bias	Ta=Tstg max, V_{GSS}(max),1000時間 Ta=Tstg max, V_{GSS}(max), , 1000hours	JESD22-A108	22	0
高加速温湿度ストレス　HAST Highly Accelerated Stress Test	130±2℃ , 85±5%RH , 規定のバイアス , 100時間 130±2℃, 85±5%RH, specified bias ,100hours	JESD22-A110	22	0

2. 測定項目及び故障判定基準(FAILURE CRITERIA)

測定項目 (ITEM)	測定条件 (CONDITION)	故障判定基準 (CRITERIA)
ゲート漏れ電流　: IGSS Gate-Source Leakage : IGSS	仕様書条件による Per　specification	規格値の2倍以内 Within the two times of the standard value.
ドレイン遮断電流　: IDSS Zero Gate Voltage Drain Current : IDSS	仕様書条件による Per　specification	規格値の2倍以内 Within the two times of the standard value.
順電圧ｱﾄﾞﾐﾀﾝｽ : | Yfs | Forward Transfer Admittance : |Yfs|	仕様書条件による Per　specification	初期値に対する変化率　±20% Changing rate of ±20%
外観 Physical	目視 Visual check	著しい変化のないこと No outstanding change in physical.

3. 判定結果(JUDGEMENT)

各試験項目とも不具合の発生は認められておりません。
No failure is observed from　each test item.

MOS(SOT-416(EMT3))

5M Change Point①

PCN No. 3022008

		Before	After① (organic film materials change)	After② (Shiga factory ddition)	At the change Point Comment
Factory		Rohm Apollo Chikugo Factory	Rohm Apollo Chikugo Factory	Rohm Shiga Factory	There are the approval results with other products
Man	-	In a license system The worker who was authorized	← There is no change	In a license system The worker who was authorized	We were authorized in each factory worker
Machine	・Equipment in use	Existing facilities	← There is no change	← (equal facilities)	We confirm it, and there is no characteristic in a problem
	・Process control contents	We follow QC process chart	← There is no change	← (equal management contents)	–
	・Management method	SPC management	← There is no change	← (equal function)	–
Material	・Wafer	8 inch	← There is no change	← (same material)	–
	・reticle	6 inch reticle	← There is no change	← (the same design)	
	・Organic film	Old Polyimide	New Polyimide	New Polyimide	We confirm it, and there is no characteristic in a problem
	・Others	Medicine, gas	← There is no change	I use an equal performance product	We confirm it, and there is no characteristic in a problem

5M Change Point②

PCN No. 3022008

		Before	After① (organic film materials change)	After② (Shiga factory ddition)	At the change Point Comment
Factory		Rohm Apollo Chikugo Factory	Rohm Apollo Chikugo Factory	Rohm Shiga Factory	There are the approval results with other products
Method	・Work method	Work standard	← There is no change	← (equal standard)	There is no difference in a work procedure
	・Inspection contents	We follow an inspection standard	← There is no change	← (equal contents)	–
	・Traceability	15 years	← There is no change	← (equal management contents)	–
Measurement	・Measuring equipment	Existing device	← There is no change	← (equal method)	Device stiffness military ration enforcement There is no problem in finished
	・Management method	We follow facilities QC process chart	← There is no change	← (equal management contents)	–

We checked according to 5M change point that there were no problems.

Internal PN	Public (External) PN
K7408AP12	K7408AP12
K7807A68P11	K7807A68P11
K7822A60P11	K7822A60P11
K8001AP11	K8001AP11
K8002AP11	K8002AP11
K8003AP11	K8003AP11
K8016AP11	K8016AP11
R6002END3TL1	R6002END3TL1
R6002ENDTL	R6002ENDTL
R6002ENHTB1	R6002ENHTB1
R6004END3DIATL	R6004END3DIATL
R6004END3TL	R6004END3TL
R6004END3TL1	R6004END3TL1
R6004ENDDIATL	R6004ENDDIATL
R6004ENDTL	R6004ENDTL
R6004ENJTL	R6004ENJTL
R6004ENX	R6004ENX
R6004ENXC7	R6004ENXC7
R6004ENXC7G	R6004ENXC7G
R6004JND3TL1	R6004JND3TL1
R6004JNJGTL	R6004JNJGTL
R6004JNX	R6004JNX
R6004JNXC7G	R6004JNXC7G
R6004KND3TL1	R6004KND3TL1
R6004KNJTL	R6004KNJTL
R6004KNX	R6004KNX
R6004KNXC7G	R6004KNXC7G
R6006JND3TL1	R6006JND3TL1
R6006JNJGTL	R6006JNJGTL
R6006JNX	R6006JNX
R6006JNXC7G	R6006JNXC7G
R6007END3DIATL	R6007END3DIATL
R6007END3TL	R6007END3TL
R6007END3TL1	R6007END3TL1
R6007ENJTL	R6007ENJTL
R6007ENX	R6007ENX
R6007ENXA24C12	R6007ENXA24C12
R6007ENXC7	R6007ENXC7
R6007ENXC7G	R6007ENXC7G
R6007JND3TL1	R6007JND3TL1
R6007JNJGTL	R6007JNJGTL
R6007JNXC7G	R6007JNXC7G
R6009END3DIATL	R6009END3DIATL
R6009END3TL	R6009END3TL
R6009END3TL1	R6009END3TL1
R6009ENJTL	R6009ENJTL
R6009ENJX01TL	R6009ENJTL
R6009ENX	R6009ENX
R6009ENXC7	R6009ENXC7

R6009ENXC7G	R6009ENXC7G
R6009JND3TL1	R6009JND3TL1
R6009JNJGTL	R6009JNJGTL
R6009JNX	R6009JNX
R6009JNXC7G	R6009JNXC7G
R6011END3DIATL	R6011END3DIATL
R6011END3TL	R6011END3TL
R6011END3TL1	R6011END3TL1
R6011ENJTL	R6011ENJTL
R6011ENX	R6011ENX
R6011ENXA24C12	R6011ENXA24C12
R6011ENXC7	R6011ENXC7
R6011ENXC7G	R6011ENXC7G
R6011ENXCF74	R6011ENXCF74
R6011ENXGZC7	R6011ENXGZC7
R6011KND3TL	R6011KND3TL
R6011KND3TL1	R6011KND3TL1
R6011KND3TR1	R6011KND3TR1
R6011KNX	R6011KNX
R6011KNXA24C12	R6011KNXA24C12
R6011KNXC7	R6011KNXC7
R6011KNXC7G	R6011KNXC7G
R6011KNXGZC7	R6011KNXGZC7
R6012JNJGTL	R6012JNJGTL
R6012JNX	R6012JNX
R6012JNXC7G	R6012JNXC7G
R6015ENJTL	R6015ENJTL
R6015ENX	R6015ENX
R6015ENXA24C12	R6015ENXA24C12
R6015ENXC7	R6015ENXC7
R6015ENXC7G	R6015ENXC7G
R6015ENXGZC7	R6015ENXGZC7
R6015ENZC17	R6015ENZC17
R6015ENZC8	R6015ENZC8
R6015KNJTL	R6015KNJTL
R6015KNX	R6015KNX
R6015KNXA24C12	R6015KNXA24C12
R6015KNXC7	R6015KNXC7
R6015KNXC7G	R6015KNXC7G
R6015KNXCF74	R6015KNXCF74
R6015KNXGZC7	R6015KNXGZC7
R6015KNZC17	R6015KNZC17
R6018JNJGTL	R6018JNJGTL
R6018JNX	R6018JNX
R6018JNXC7G	R6018JNXC7G
R6020ENJX01TL	R6020ENJTL
R6020ENJX25TL	R6020ENJD03TL
R6020ENXA24C12	R6020ENXA24C12
R6020ENXC7	R6020ENXC7
R6020ENXC7G	R6020ENXC7G
R6020ENXD02	R6020ENX

R6020ENXDIA	R6020ENXDIA
R6020ENXFU7C7	R6020ENXFU7C7
R6020ENXGZC7	R6020ENXGZC7
R6020ENXM05CF68	R6020ENXFU7CF68
R6020ENXM81C12	R6020ENXM81C12
R6020ENZ4C13	R6020ENZ4C13
R6020ENZC17	R6020ENZC17
R6020ENZM60C17	R6020ENZM60C17
R6020JNJGTL	R6020JNJGTL
R6020JNJGTLL	R6020JNJGTLL
R6020JNX	R6020JNX
R6020JNXC7G	R6020JNXC7G
R6020JNZ4C13	R6020JNZ4C13
R6020JNZC17	R6020JNZC17
R6020KNJTL	R6020KNJTL
R6020KNX	R6020KNX
R6020KNXA24C12	R6020KNXA24C12
R6020KNXC7	R6020KNXC7
R6020KNXC7G	R6020KNXC7G
R6020KNXCF74	R6020KNXCF74
R6020KNXGZC7	R6020KNXGZC7
R6020KNZ4C13	R6020KNZ4C13
R6020KNZC17	R6020KNZC17
R6024ENJTL	R6024ENJTL
R6024ENX	R6024ENX
R6024ENXA24C12	R6024ENXA24C12
R6024ENXC7	R6024ENXC7
R6024ENXC7G	R6024ENXC7G
R6024ENXGZC7	R6024ENXGZC7
R6024ENXM05CF68	R6024ENXFU7CF68
R6024ENZ4C13	R6024ENZ4C13
R6024ENZC17	R6024ENZC17
R6024KNJTL	R6024KNJTL
R6024KNX	R6024KNX
R6024KNXA24C12	R6024KNXA24C12
R6024KNXC7	R6024KNXC7
R6024KNXC7G	R6024KNXC7G
R6024KNXGZC7	R6024KNXGZC7
R6024KNZ4C13	R6024KNZ4C13
R6025JNX	R6025JNX
R6025JNXC7G	R6025JNXC7G
R6025JNZ4C13	R6025JNZ4C13
R6025JNZC17	R6025JNZC17
R6030ENX	R6030ENX
R6030ENXA24C12	R6030ENXA24C12
R6030ENXC7	R6030ENXC7
R6030ENXC7G	R6030ENXC7G
R6030ENXGZC7	R6030ENXGZC7
R6030ENXM05CF68	R6030ENXFU7CF68
R6030ENZ4C13	R6030ENZ4C13
R6030ENZC17	R6030ENZC17

R6030JNXC7G	R6030JNXC7G
R6030JNZ4C13	R6030JNZ4C13
R6030JNZC17	R6030JNZC17
R6030KNX	R6030KNX
R6030KNXA24C12	R6030KNXA24C12
R6030KNXC7	R6030KNXC7
R6030KNXC7G	R6030KNXC7G
R6030KNXCF56	R6030KNXCF56
R6030KNXCF74	R6030KNXCF74
R6030KNXGZC7	R6030KNXGZC7
R6030KNZ4C13	R6030KNZ4C13
R6030KNZC17	R6030KNZC17
R6035ENZ4C13	R6035ENZ4C13
R6035ENZC17	R6035ENZC17
R6035KNZ4C13	R6035KNZ4C13
R6035KNZC17	R6035KNZC17
R6042JNZ4C13	R6042JNZ4C13
R6047ENZ4C13	R6047ENZ4C13
R6047KNZ4C13	R6047KNZ4C13
R6050JNZ4C13	R6050JNZ4C13
R6050JNZC17	R6050JNZC17
R6070JNZ4C13	R6070JNZ4C13
R6076ENZ4C13	R6076ENZ4C13
R6076KNZ4C13	R6076KNZ4C13