



# Product Termination Notification



Product Group: Vishay Siliconix/Mar 03, 2015/PCN- SIL-0852014 Rev3

## End of Life Notification

**DESCRIPTION OF CHANGE:** For SQ2361EES-T1-GE3, we had announced via PCN-SIL-0462014 that we will be transferring the wafer Fab site from Santa Clara, USA to Itzehoe, Germany and no changes were expected in silicon design or the datasheet. In order to meet part qualification criteria per AEC Q101 Rev D specifications, we had to make changes in silicon design which will result in change in datasheet specifications. The replacement products are identified in the table below.

Production of SQ2361EES-T1-GE3 will be terminated per the time schedule in this product termination notification and last time buy orders must be received within the specified timeframe.

**CLASSIFICATION OF CHANGE:** End of life

**REASON FOR CHANGE:** Closure of Fab at Santa Clara

**EXPECTED INFLUENCE ON QUALITY/RELIABILITY/PERFORMANCE:** We expect quality and reliability to improve with the redesigned parts. Please refer to the following page for comparison of electrical parameters.

**PRODUCT CATAGORY:** Automotive MOSFETs

**VISHAY PART NUMBERS AFFECTED:**

Affected Vishay Part	Recommended Replacement Part	Sample Availability of Replacement Part
SQ2361EES-T1-GE3	<b>SQ2361ES-T1-GE3</b> (preferred replacement without ESD network) <b>SQ2361AEES-T1-GE3</b> (replacement with ESD network)	Mar-15

**VISHAY BRAND(s):** Vishay-Siliconix

**QUALIFICATION DATA:** Qualification data for replacement part is planned for March 2015

**SAMPLE AVAILABILITY:** Schedule of availability of qualified samples is listed above. For samples, please email [automos.pcn@vishay.com](mailto:automos.pcn@vishay.com) with subject PCN-SIL-0852014 and include replacement part number, date by which samples are needed, required quantity, ship-to address and contact information including phone number.

**TIME SCHEDULE:** Last time buy orders are required by 30-Jun 2015 and last time buy shipments will be made by 30-Dec-2015.

**ISSUED BY:** Shishir Rai, Product Marketing Manager (E-mail: [Shishir.Rai@Vishay.com](mailto:Shishir.Rai@Vishay.com))

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Procedure #

**Affected Part Number** SQ2361EES  
AEC-Q101 Qualified Yes  
Package Type SOT-23  
Process Technology 90M cells/sq.in.  
100% Rg & UIS Test Yes  
Datasheet Rev C

**Replacement Part Number** SQ2361ES  
AEC-Q101 Qualified Yes  
Package Type SOT-23  
Process Technology 90M cells/sq.in.  
100% Rg & UIS Test Yes  
Datasheet Rev A - Pending\*

\* Note: This part number is still under release process and the datasheet specifications are preliminary. The parameters are subjected to verification and may be different in the final version of the datasheet.

Absolute Maximtm Ratings	Symbol	Test Conditions	Limit	Units
Drain-Source Voltage	VDS		-60	V
Gate-Source Voltage	VGS		20	±V
Continuous Drain Current	ID	TC=25°C	-2.5	A
Continuous Drain Current	ID	TC=125°C	-1.4	A
Continuous Source Current (Diode Conduction)	IS		-2.5	A
Pulsed Drain Current	IDM		-10	A
Single Pulse Avalanche Current	IAS	L=0.1mH	-15	A
Single Pulse Avalanche Energy	EAS		11	mJ
Max Power Dissipation	PD	TC=25°C	2.0	W
Max Power Dissipation	PD	TC=125°C	0.67	W
Thermal Resistance J-A	RthJA	PCB Mount	175	°C/W
Thermal Resistance J-C	RthJF		75	°C/W

Symbol	Test Conditions	Limit	Units
VDS		-60	V
VGS		20	±V
ID	TC=25°C	-2.5	A
ID	TC=125°C	-1.4	A
IS		-2.5	A
IDM		-10	A
IAS	L=0.1mH	-15	A
EAS		11	mJ
PD	TC=25°C	2.0	W
PD	TC=125°C	0.67	W
RthJA	PCB Mount	175	°C/W
RthJF		75	°C/W

Type of Change	Risk
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None

Specifications Tj = 25°C, unless otherwise noted	Symbol	Test Conditions		Min	Typ	Max	Units
		VGS = 0V	ID = 250uA				
Drain-Source Breakdown Voltage	VDS	VGS = 0V	ID = 250uA	-60			V
Gate-Source Threshold Voltage	VGS(th)	VDS = VGS	ID = 250uA	-1.5		-2.5	V
On State Drain Current	ID(on)	VGS = -10V	VDS≤-5V	-10			A
Drain-Source On-State Resistance	RDS(on)	VGS = -10V	ID = -2.4A		0.115	0.15	Ω
		VGS = -10V	ID = -2.4A Tj = 125°C			0.26	
Drain-Source On-State Resistance	RDS(on)	VGS = -10V	ID = -2.4A Tj = 175°C			0.31	Ω
Drain-Source On-State Resistance		VGS = -4.5V	ID = -1.8A		0.16	0.200	
Forward Transconductance	gfs	VDS = -10V	ID = -2A		5		S
Input Capacitance	Ciss	VGS = 0V	VDS = -30V, f = 1MHz		435	545	pF
Output Capacitance	Coss				55	70	
Reverse Transfer Capacitance	Crss				40	50	
Total Gate Charge	Qg	VGS = -10V	VDS = -30V, ID = -6A		11.2	17	nC
Gate-Source Charge	Qgs				1.6		
Date-Drain Charge	Qgd				3.2		
Gate Resistance	Rg	f = 1MHz		2.7	5.4	8.1	Ω
Turn-On delay Time	td(on)	VDD = -30V,RL = 20Ω ID = -1.5A,VGEN = -10V,Rg = 1Ω		7	11		ns
Rise Time	tr			8	12		
Turn-Off Delay Time	td(off)			19	29		
Fall Time	tf			8	12		
Pulsed Source-Drain Current	ISM					-10	A
Forward Voltage	VSD	VGS = 0V	IF = -1.5A		-0.8	-1.2	V

Symbol	Test Conditions	Min	Typ	Max	Units	
						VGS = 0V
VDS	VGS = 0V	ID = -250uA	-60		V	
VGS(th)	VDS = VGS	ID = -250uA	-1.5		-2.5	
ID(on)	VGS = -10V	VDS≤-5V	-10		A	
RDS(on)	VGS = -10V	ID = -2.4A		0.130	0.177	
	VGS = -10V	ID = -2.4A Tj = 125°C			0.310	
	VGS = -10V	ID = -2.4A Tj = 175°C			0.320	
	VGS = -4.5V	ID = -1.8A		0.205	0.246	
gfs	VDS = -10V	ID = -2A		5	S	
Ciss	VGS = 0V	VDS = -30V, f = 1MHz		380		
Coss				50		
Crss				35		
Qg	VGS = -10V	VDS = -30V, ID = -6A		9		
Qgs				1.3		
Qgd				2.5		
Rg	f = 1MHz			5.5	Ω	
td(on)	VDD = -30V,RL = 20Ω ID = -1.5A,VGEN = -10V,Rg = 1Ω		7		ns	
tr			8			
td(off)			19			
tf			8			
ISM					-10	A
VSD	VGS = 0V	IF = -1.5A		-0.8	-1.2	V

Type of Change	Risk
None	None
None	None
None	None
Spec changed	Check
Spec changed	Check
Spec changed	Check
Spec changed	Check
None	None
Improvement	None
Improvement	None
Improvement	None
Improvement	Check
Improvement	None
Improvement	None
Spec changed	Check
Application dependent	Check
Application dependent	Check
Application dependent	Check
Application dependent	Check
None	None
None	None

**Affected Part Number** SQ2361EES  
AEC-Q101 Qualified Yes  
Package Type SOT-23  
Process Technology 90M cells/sq.in.  
100% Rg & UIS Test Yes  
Datasheet Rev C

**Replacement Part Number** SQ2361AEES\*  
AEC-Q101 Qualified Yes  
Package Type SOT-23  
Process Technology 90M cells/sq.in.  
100% Rg & UIS Test Yes  
Datasheet Rev A - Pending\*

\* Note: This part number is still under release process and the datasheet specifications are preliminary. The parameters are subjected to verification and may be different in the final version of the datasheet.

Absolute Maximtm Ratings	Symbol	Test Conditions	Limit	Units
Drain-Source Voltage	VDS		-60	V
Gate-Source Voltage	VGS		20	±V
Continuous Drain Current	ID	TC=25°C	-2.5	A
Continuous Drain Current	ID	TC=125°C	-1.4	A
Continuous Source Current (Diode Conduction)	IS		-2.5	A
Pulsed Drain Current	IDM		-10	A
Single Pulse Avalanche Current	IAS	L=0.1mH	-15	A
Single Pulse Avalanche Energy	EAS		11	mJ
Max Power Dissipation	PD	TC=25°C	2.0	W
Max Power Dissipation	PD	TC=125°C	0.67	W
Thermal Resistance J-A	RthJA	PCB Mount	175	°C/W
Thermal Resistance J-C	RthJF		75	°C/W

Symbol	Test Conditions	Limit	Units
VDS		-60	V
VGS		20	±V
ID	TC=25°C	-2.5	A
ID	TC=125°C	-1.4	A
IS		-2.5	A
IDM		-10	A
IAS	L=0.1mH	-15	A
EAS		11	mJ
PD	TC=25°C	2.0	W
PD	TC=125°C	0.67	W
RthJA	PCB Mount	175	°C/W
RthJF		75	°C/W

Type of Change	Risk
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None

Specifications TJ = 25°C, unless otherwise noted	Symbol	Test Conditions		Min	Typ	Max	Units
		VGS = 0V	ID = 250uA				
Drain-Source Breakdown Voltage	VDS	VGS = 0V	ID = 250uA	-60			V
Gate-Source Threshold Voltage	VGS(th)	VDS = VGS	ID = 250uA	-1.5		-2.5	V
On State Drain Current	ID(on)	VGS = -10V	VDS≤-5V	-10			A
Drain-Source On-State Resistance	RDS(on)	VGS = -10V	ID = -2.4A		0.115	0.15	Ω
		VGS = -10V	ID = -2.4A Tj = 125°C			0.26	
Drain-Source On-State Resistance	RDS(on)	VGS = -10V	ID = -2.4A Tj = 175°C			0.31	Ω
Drain-Source On-State Resistance		VGS = -4.5V	ID = -1.8A		0.16	0.200	
Forward Transconductance	gfs	VDS = -10V	ID = -2A		5		S
Input Capacitance	Ciss	VGS = 0V	VDS = -30V, f = 1MHz		435	545	pF
Output Capacitance	Coss				55	70	
Reverse Transfer Capacitance	Crss				40	50	
Total Gate Charge	Qg	VGS = -10V	VDS = -30V, ID = -6A		11.2	17	nC
Gate-Source Charge	Qgs				1.6		
Date-Drain Charge	Qgd				3.2		
Gate Resistance	Rg	f = 1MHz		2.7	5.4	8.1	Ω
Turn-On delay Time	td(on)	VDD = -30V,RL = 20Ω ID = -1.5A,VGEN = -10V,Rg = 1Ω			7	11	ns
Rise Time	tr				8	12	
Turn-Off Delay Time	td(off)				19	29	
Fall Time	tf				8	12	
Pulsed Source-Drain Current	ISM					-10	A
Forward Voltage	VSD	VGS = 0V	IF = -1.5A		-0.8	-1.2	V

Symbol	Test Conditions	Min	Typ	Max	Units
VDS	VGS = 0V	ID = 250uA	-60		V
VGS(th)	VDS = VGS	ID = 250uA	-1.5		-2.5
ID(on)	VGS = -10V	VDS≤-5V	-10		A
RDS(on)	VGS = -10V	ID = -2.4A		0.13	0.172
	VGS = -10V	ID = -2.4A Tj = 125°C			0.3
	VGS = -10V	ID = -2.4A Tj = 175°C			0.315
	VGS = -4.5V	ID = -1.8A		0.18	0.230
gfs	VDS = -10V	ID = -2A		5	S
Ciss	VGS = 0V	VDS = -30V, f = 1MHz		380	
Coss				50	
Crss				35	
Qg	VGS = -10V	VDS = -30V, ID = -6A		10	
Qgs				1.5	
Qgd				3	
Rg	f = 1MHz			5.5	Ω
td(on)	VDD = -30V,RL = 20Ω ID = -1.5A,VGEN = -10V,Rg = 1Ω			7	ns
tr				8	
td(off)				19	
tf				8	
ISM					-10
VSD	VGS = 0V	IF = -1.5A		-0.8	-1.2

Type of Change	Risk
None	None
None	None
None	None
Spec changed	Check
Spec changed	Check
Spec changed	Check
Spec changed	Check
None	None
Improvement	None
Improvement	None
Improvement	None
Improvement	Check
Improvement	None
Improvement	None
Spec changed	Check
Application dependent	Check
Application dependent	Check
Application dependent	Check
Application dependent	Check
None	None
None	None