

Product Termination Notification

Product Group: SIL/Wed Mar 1, 2023/PTN-SIL-012-2023-REV-0



Conversion to Copper (Cu) Wire - SQS405ENW-T1_GE3

For further information, please contact your regional Vishay office.

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Description of Change: The affected part number listed in this notification will be converted to a Copper wire material set. The SQS405CENW-T1_GE3 replaces the SQS405ENW-T1_GE3 and offers a long-term solution that is compatible with our latest package assembly methods. This silicon die uses exactly the same technology, process and "in-house" wafer fabrication facility as the existing parts. Any minor specification changes (documented in the comparison sheets provided) reflect small lot to lot variations and improvements that have occurred over time since the original parts were released more than ten years ago. No final test limits have been changed apart from the avalanche test. In this case we have adopted new consistency rules whereby we test at or below the maximum rated current for the device which is -16A. Previously this test was performed at -19A in violation of the maximum rated current.

Classification of Change: Standardization of materials

Expected Influence on Quality/Reliability/Performance: None

Part Numbers/Series/Families Affected: SQS405ENW-T1_GE3

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Last Time Buy Date: Sun Sep 3, 2023 Last Time Ship Date: Sun Mar 3, 2024

Sample Availability: Qualified samples of replacement product are available immediately

Product Identification: SQS405CENW-T1_GE3

Qualification Data: AEC Q101 qualification data of replacement product is available. Qualification PPAP is available now.

This PTN is considered approved, without further notification, unless we receive specific customer concerns before Thu Aug 31, 2023 or as specified by contract.

Issued By: Vishay Siliconix, business-americas@vishay.com

		Affected Part Number AEC Q101 Qualified Package Type Process Technology Bondwire Material 100% Rg & UIS Tested	SQS405ENW Yes PPAK 1212-8W 90M cells/in ² Gold (Au) Yes							Replacement Part Number AEC Q101 Qualified Package Type Process Technology Bondwire Material 100% Rg and UIS Tested	SQS405CENW Yes PPAK 1212-8W 90M cells/in ² Copper (Cu) Yes						
		Datasheet Rev	С							Datasheet Rev	В		i				1
				Units								Units					
Absolute Maxium Ratings	Symbol	Test Conditions	Limit						Symbol	Test Conditions	Limit					Type of Change	Risk
Drain-Source Voltage	VDS		-12	V					VDS		-12	V				None	None
Gate-Source Voltage	VGS		±8	V	1				VGS		±8	V				None	None
Continuous Drain Current	ID	TC = 25°C	-16	A	1				ID	TC = 25°C	-16	A				None	None
Continuous Drain Current	ID	TC = 125°C	-16	A					ID	TC = 125°C	-16	A				None	None
Continuous Source Current (Diode Conduction)	IS		-16	A	-				IS		-16	A				None	None
Pulsed Drain Current Single Pulse Avalanche Current	IDM		-64 -19	A	1				IDM IAS		-64 -16	A				None Reduction	None None
Single Pulse Avalanche Eurrent Single Pulse Avalanche Energy	EAS	L = 0.1mH	-19	A mJ	1				EAS	L = 0.1mH	12.8	mJ				Reduction	None
Max Power Dissipation	PD	TC = 25°C	39	W	1				PD	TC = 25°C	39	W				None	None
Max Power Dissipation	PD	TC = 125°C	13	W	1				PD	TC = 125°C	13	w				None	None
Operating Junction and storage temperature range	TI	10-1150	-55 to +175	°C	i				TI	10-1150	-55 to +175	°C				None	None
Thermal Resistance J A	RthJA	PCB Mount	81	°C/W	t				RthJA	PCB Mount	81	*c/w				None	None
Thermal Resistance J-C	RthJC	T CD IWOUIN	3.8	°C/W	1				RthJC	T CD Middin	3.8	*C/W				None	None
Soldering recommendations (peak temperature)			260								260					Was not there	
	-																
Specifications TJ=25°C unless otherwise noted		Test Co	enditions	MIN	TYP	MAX	Units]		Test Con	ditions	MIN	TYP	MAX	Units	Type of Change	Risk
Drain-Source Breakdown Voltage	VDS	VGS=0V,	ID=-250uA	-12			٧	I	VDS	VGS=0V, ID	=-250uA	-12			V	None	None
Gate-Source Threshold Voltage	VGS(th)	VDS=VGS.	ID=-250uA	-0.45	-0.6	-1	V	i	VGS(th)	VDS=VGS, II	D=-250uA	-0.45	-0.6	-1	v	None	None
Gate -Source Leakage	IGSS		VGS=±8V			±100	nA	i	IGSS	VDS=0V, V				±100	nA	None	None
Gate -source ceakage	1033	VGS=0V	VDS=-12V		-	-1	uA	ł	1033	VGS=0V	VDS=-12V	-		-1	uA		None
Zero Voltage Drain Current	IDSS	VGS=UV VGS=UV	VDS=-12V VDS=-12V, Ti=125*C		_	-50	uA		ince	VGS=UV VGS=UV	VDS=-12V VDS=-12V, Ti=125°C	_		-50	uA	None None	None
		VGS=0V	VDS=-12V, Tj=175*C			-150	uA	ł	1030	VGS=0V	VDS=-12V, Tj=175°C	 		-150	uA	None	None
On-State Drain Current	ID(ON)	VGS=-4.5V	VDSs-5V	-20		-130	A	ł	ID(ON)	VGS=-4.5V	VDS≥-5V	20		-130	A	None	None
Drain-Source On-State Resistance		VGS=-4.5V	ID=-13.5A		0.014	0.020	Ω	1		VGS=-4.5V	ID=-13.5A		0.0106	0.0150	Ω	Improvement	None
	RDS(on)	VGS=-4.5V	ID=-13.5A, Ti=125°C			0.024			VGS=-4.5V	ID=-13.5A, Ti=125*C			0.0205	Ω	Improvement	None	
		VGS=-4.5V	ID=-13.5A, Tj=175°C			0.026	Ω	7	RDS(on)	VGS=-4.5V	ID=-13.5A, Tj=175°C			0.0233	Ω	Improvement	None
		VGS=-2.5V	ID=-12A		0.017	0.026	Ω	1		VGS=-2.5V	ID=-12A		0.0166	0.0220	Ω	Improvement	None
Forward Transconductance	gfs	VDS=-6V, ID=-13.5A			34		S	i	gfs	VDS=-6V, IE	D=-13.5A		41		S	These small parametetric	None
Input Capacitance	Ciss				2210	2650		i	Ciss				2260	3050		changes reflect the latest	None
		VGS=0V	VDS=-6V, f=1MHz		840		pF			VGS=0V	VDS=-6V, f=1MHz				pF	characterization methods and are	
Output Capacitance	Coss	VG3-0V	VD3-'0V, I-1WHZ	_		1010	pr		Coss	VG3-0V	VD30V, I-1IVINZ		815	1100	pr	subject to lot-to-lot variations. N	
Reverse Transfer Capacitance	Crss				660	800			Crss				630	850		final test limits have been	None
Total Gate Charge	Qg	l			49.8	75			Qg				53.6	81		changed.	None
Gate-Source Charge	Ogs	VGS=-8V	VDS=-6V, ID=-10A		3.8	5.9	nC		Qgs	VGS=-8V	VDS=-6V. ID=-4A		4		nC		None
		1									,				1		
Gate-Drain Charge	Qgd				8.2	15		ı	Qgd				9.6				None
Gate Resistance	Rg	f=1mHz		1.1	2.37	4	Ω		Rg	f=1mHz		1.55	3.1	4.65	Ω	Test limit re-centered based on latest charcterization methds. No changes to the silicon design and process	
Turn-On Delay Time	td(on)			1	27	34.5		1	td(on)				11	20		No actual change to the device	None
Rise Time	tr	VDD=-6V, RL=0.6Ω, ID=-1.5A, Vgen=4.5V, Rg=1Ω			29	59 72 ns			tr	VDD=-6V, RL=1.5Ω, ID=-	44 Vann 9V Ba-1C		6	12	ns	only test condition	None
Turn-Off Delay Time	td(off)							l	td(off)	vDD=-6V, KL=1.5Ω, ID=-	чм, vgen=-8v, кg=±Ω		58	90	ns	standardization	None
Fall Time	tf				26	32		tf					26	40			None
Pulsed Source-Drain Current	ISM					-64	Α	1	ISM					-64	A	None	None
Forward Voltage	VSD	If=-10A VGS=0V			-0.8	-1.1	٧		VSD	I _p =-10A VGS=0V			-0.81	-1.1	v	None	None
Body diode reverse recovery time	trr	_					ns	ı	trr				44	88	ns	Additional chracterization data	None
Body diode reverse recovery charge	Qrr	. [nC		Qrr	I _E =-5A, di/dt=100A/us			32	64	nC	not previosuly documented	None
Reverse recovery fall time	ta						ns	l	ta				22		ns		None
Reverse recovery rise time	th.	1					ns	1	th				22		ns		None
	1			 				1				t					
Body diode peak reverse recovery current	(32R)MR						A		RM(RCC)				-1.2		A	1	None