



The DNA of tech.™



Revision in SQ3585EV Datasheet from Rev. B to Rev. C

For further information, please contact your regional Vishay office.

CONTACT INFORMATION

Americas

Vishay Siliconix
2565 Junction Ave
-
San Jose CA United States 95134
Phone: 4089705799
Fax: 4089705799
business-americas@vishay.com

Europe

Vishay Electronic GmbH
Dr.-Felix-Zandman-Platz 1
-
Selp Germany 95100
Phone: 49-9287-710
Fax: 49-9287-70435
business-europe@vishay.com

Asia

Vishay Intertechnology Asia Pte. Ltd
25 Tampiness Street 92
-
Singapore Singapore 528877
Phone: 65-6788-6668
Fax: 65-6788-0988
business-asia@vishay.com

Description of Change: As part of Vishay Siliconix commitment to Quality, we would like to extend to you a courtesy advisory notification of a datasheet revision for SQ3585EV (Doc #75126 Rev C attached).

There is no change to the materials or processes used in the manufacture of this part. The changes per this Advisory reflect updates as follows:

- * Updated PRODUCT SUMMARY table and ORDERING INFORMATION
- * Corrected the typo in the test conditions for "Zero gate voltage drain current"
- * Replaced SOA chart with the correct version

This Advisory is for information only and there is no need for a response.

Classification of Change: Datasheet revision

Expected Influence on Quality/Reliability/Performance: NONE

Part Numbers/Series/Families Affected: SQ3585EV-T1_GE3

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Start Shipment Date: Wed Feb 1, 2023

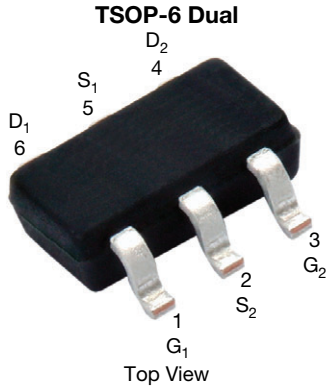
Sample Availability: This is a datasheet revision only. There is no change to the materials or processes used in the manufacture of this part.

Product Identification: SQ3585EV-T1_GE3

Qualification Data: N/A

Issued By: Lance Gurrola, business-americas@vishay.com

Automotive N- and P-Channel 20 V (D-S) MOSFET



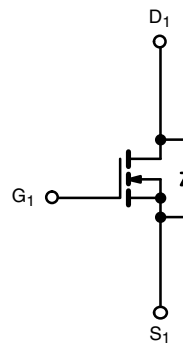
FEATURES

- TrenchFET® power MOSFET
- AEC-Q101 qualified
- 100 % R_g and UIS tested
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912

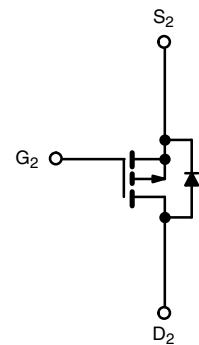
AUTOMOTIVE GRADE


RoHS
 COMPLIANT
 HALOGEN
FREE

PRODUCT SUMMARY		
	N-CHANNEL	P-CHANNEL
V _{DS} (V)	20	-20
R _{DS(on)} (Ω) at V _{GS} = ± 4.5 V	0.077	0.166
R _{DS(on)} (Ω) at V _{GS} = ± 2.5 V	0.120	0.318
I _D (A)	3.57	-2.5
Configuration	N- and p-pair	



N-Channel MOSFET



P-Channel MOSFET

ORDERING INFORMATION	
Package	TSOP-6 Dual
Lead (Pb)-free and halogen-free	SQ3585EV (for detailed order number please see www.vishay.com/doc?79771)

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)				
PARAMETER	SYMBOL	N-CHANNEL	P-CHANNEL	UNIT
Drain-source voltage	V _{DS}	20	-20	V
Gate-source voltage	V _{GS}	± 12	± 12	
Continuous drain current	I _D	T _C = 25 °C	3.57	A
		T _C = 125 °C	2	
Pulsed drain current	I _{DM}	12	-10	A
Continuous source current (diode conduction)	I _S	2.1	-2.1	
Maximum power dissipation	P _D	T _C = 25 °C	1.67	
		T _C = 125 °C	0.56	
Unclamped inductive surge UIS	I _{AV}	3.3	3	A
Operating junction and storage temperature range	T _J , T _{stg}	-55 to +175		°C

THERMAL RESISTANCE RATINGS					
PARAMETER	SYMBOL	N-CHANNEL	P-CHANNEL	UNIT	
		MAX.	MAX.		
Maximum junction-to-ambient ^a	Steady state	R _{thJA}	150	150	°C/W
Maximum junction-to-foot (drain)	Steady state	R _{thJF}	90	90	

Note

a. Surface mounted on 1" x 1" FR4 board



SPECIFICATIONS (T _J = 25°C, unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
Static								
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		N-Ch	0.6	-	1.5	V
		V _{DS} = V _{GS} , I _D = -250 μA		P-Ch	-0.6	-	-1.5	
Gate-body leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V		N-Ch	-	-	± 100	nA
				P-Ch	-	-	± 100	
Zero gate voltage drain current	I _{DSS}	V _{GS} = 0 V	V _{DS} = 20 V	N-Ch	-	-	1	μA
		V _{GS} = 0 V	V _{DS} = -20 V	P-Ch	-	-	-1	
		V _{GS} = 0 V	V _{DS} = 20 V, T _J = 55 °C	N-Ch	-	-	5	
		V _{GS} = 0 V	V _{DS} = -20 V, T _J = 55 °C	P-Ch	-	-	-5	
On-state drain current ^a	I _{D(on)}	V _{GS} = 4.5 V	V _{DS} ≥ 5 V	N-Ch	5	-	-	A
		V _{GS} = -4.5 V	V _{DS} ≤ -5 V	P-Ch	-5	-	-	
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V	I _D = 1 A	N-Ch	-	0.049	0.077	Ω
		V _{GS} = -4.5 V	I _D = -1 A	P-Ch	-	0.140	0.166	
		V _{GS} = 2.5 V	I _D = 1 A	N-Ch	-	0.066	0.120	
		V _{GS} = -2.5 V	I _D = -1 A	P-Ch	-	0.265	0.318	
Forward transconductance ^a	g _{fs}	V _{DS} = 5 V, I _D = 1 A		N-Ch	-	10	-	S
		V _{DS} = -5 V, I _D = -1 A		P-Ch	-	3	-	
Diode forward voltage ^a	V _{SD}	I _S = 1.05 A, V _{GS} = 0 V		N-Ch	-	0.80	1.10	V
		I _S = -1.05 A, V _{GS} = 0 V		P-Ch	-	-0.83	-1.10	
Dynamic ^b								
Total gate charge	Q _g	V _{GS} = 4.5 V	V _{DS} = 10 V, I _D = 1 A	N-Ch	-	1.8	2.5	nC
		V _{GS} = -4.5 V	V _{DS} = -10 V, I _D = -1 A	P-Ch	-	2.4	3.5	
Gate-source charge	Q _{gs}	V _{GS} = 4.5 V	V _{DS} = 10 V, I _D = 1 A	N-Ch	-	0.3	-	nC
		V _{GS} = -4.5 V	V _{DS} = -10 V, I _D = -1 A	P-Ch	-	0.4	-	
Gate-drain charge	Q _{gd}	V _{GS} = 4.5 V	V _{DS} = 10 V, I _D = 1 A	N-Ch	-	0.4	-	nC
		V _{GS} = -4.5 V	V _{DS} = -10 V, I _D = -1 A	P-Ch	-	0.7	-	
Gate resistance	R _g	f = 1 MHz		N-Ch	3.4	-	9.1	Ω
				P-Ch	3.4	-	9.1	
Turn-on delay time	t _{d(on)}	N-Channel V _{DD} = 10 V, R _L = 10 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _g = 1 kΩ		N-Ch	-	9	12	ns
Rise time	t _r			P-Ch	-	7	11	
		N-Ch	-	15	19			
Turn-off delay time	t _{d(off)}	P-Channel V _{DD} = -10 V, R _L = 10 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _g = 1 kΩ		P-Ch	-	16	22	
				N-Ch	-	22	28	
Fall time	t _f	N-Ch	-	8	12			
		P-Ch	-	14	24			

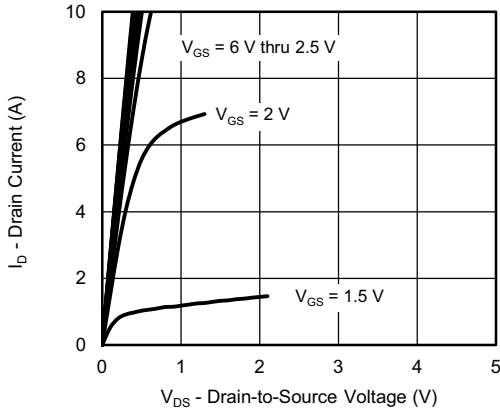
Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
- b. Guaranteed by design, not subject to production testing

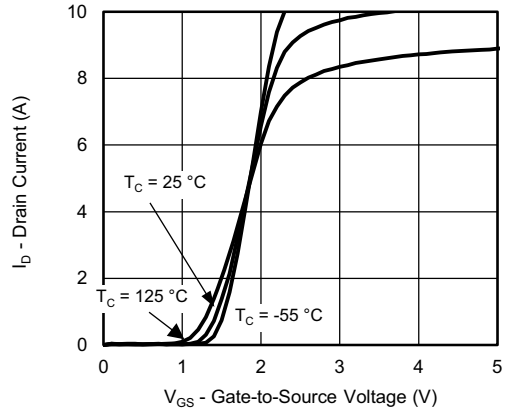
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



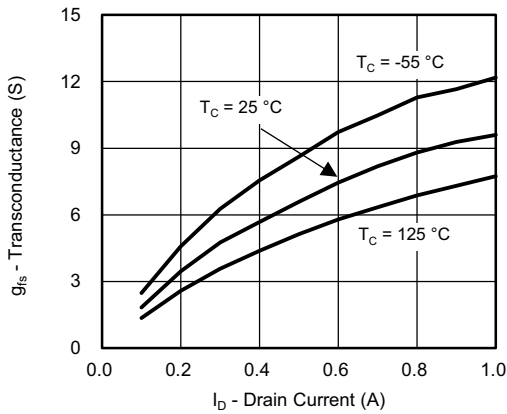
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



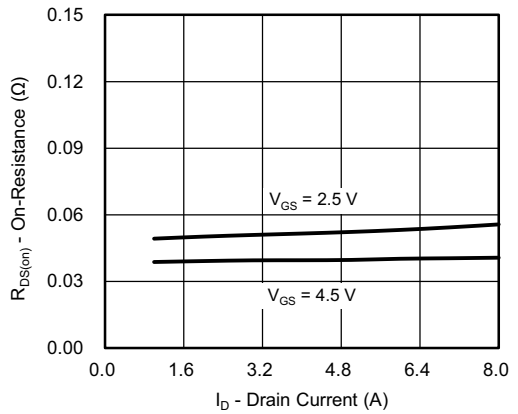
Output Characteristics



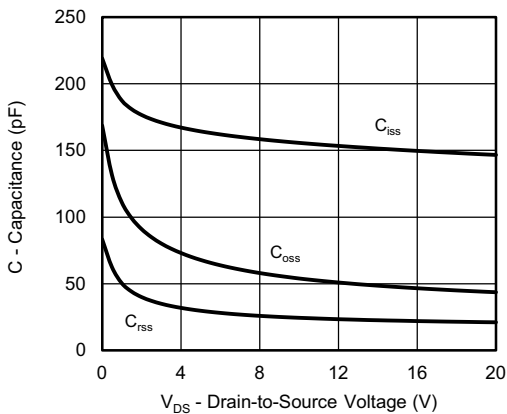
Transfer Characteristics



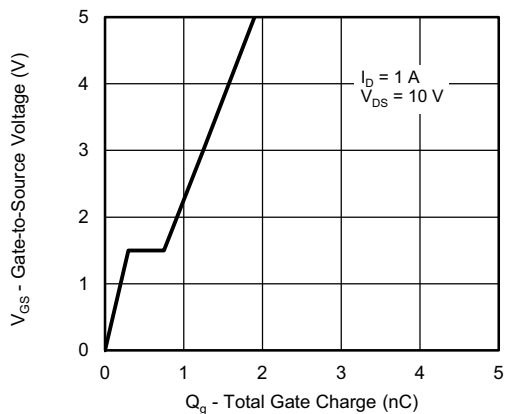
Transconductance



On-Resistance vs. Drain Current



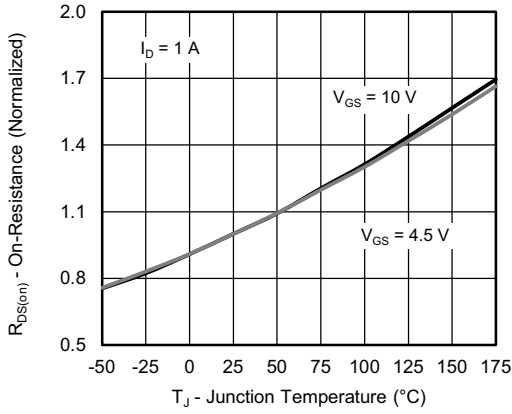
Capacitance



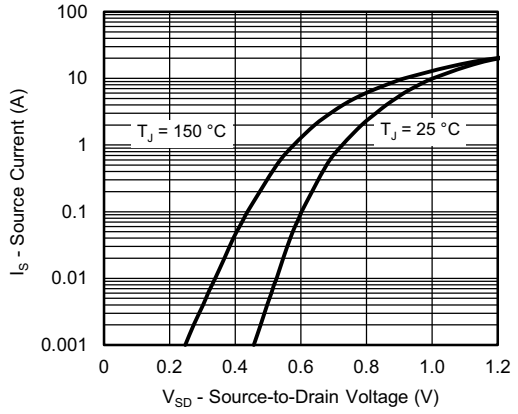
Gate Charge



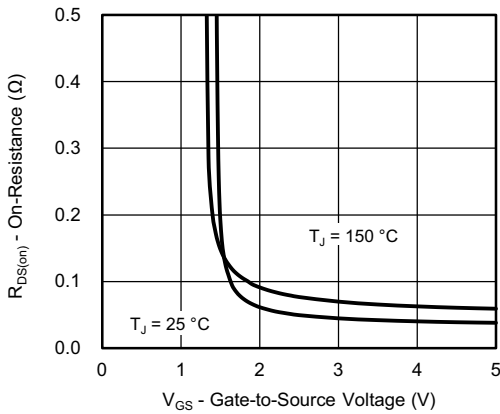
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



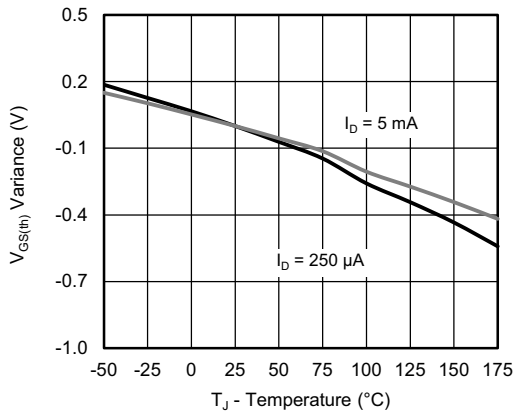
On-Resistance vs. Junction Temperature



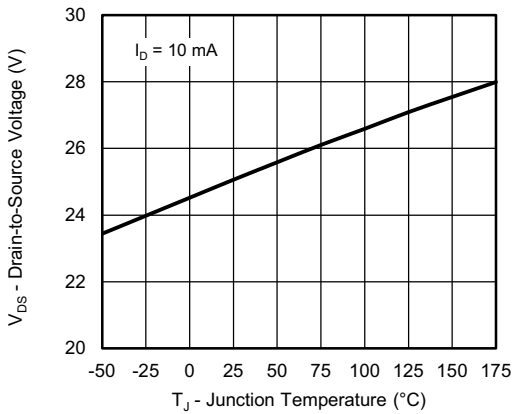
Source-Drain Diode Forward Voltage



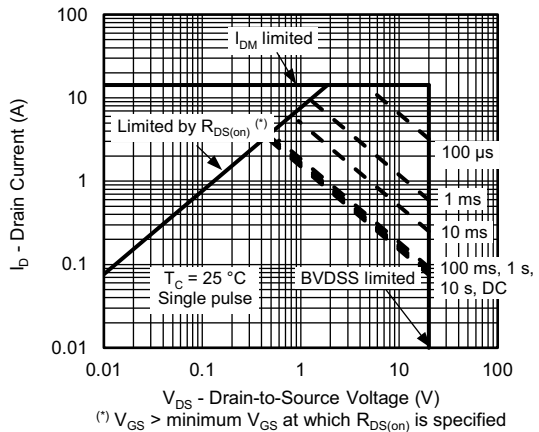
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



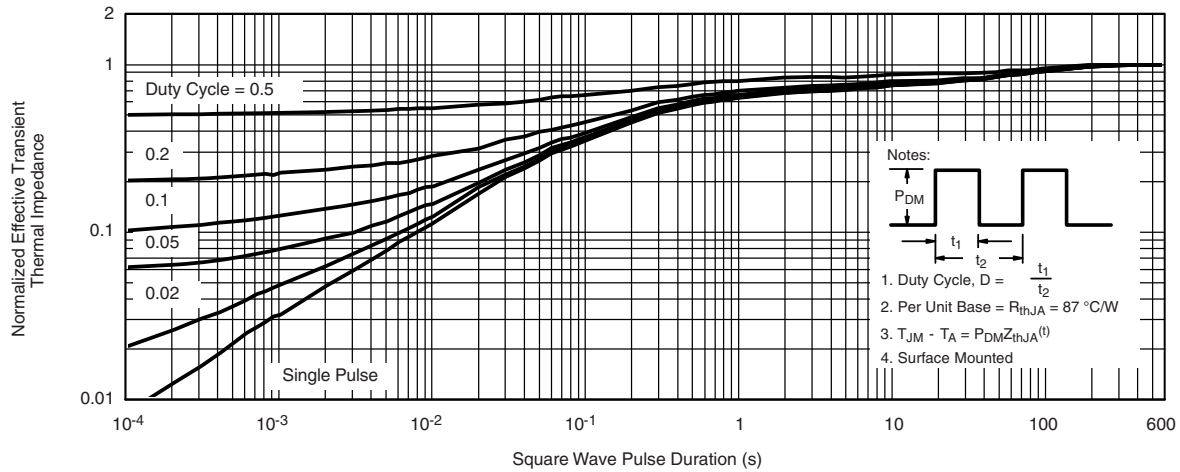
Drain Source Breakdown vs. Junction Temperature



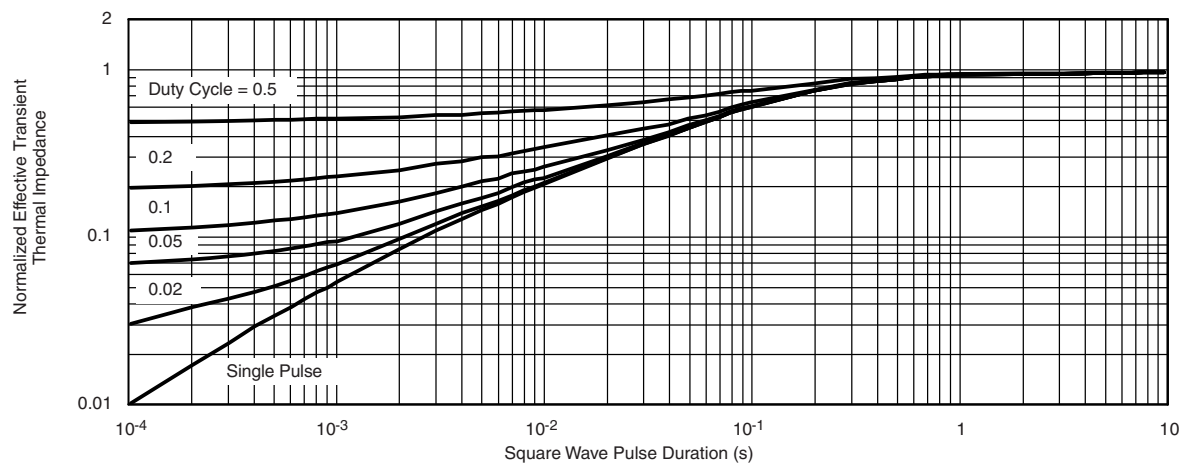
Safe Operating Area



N-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



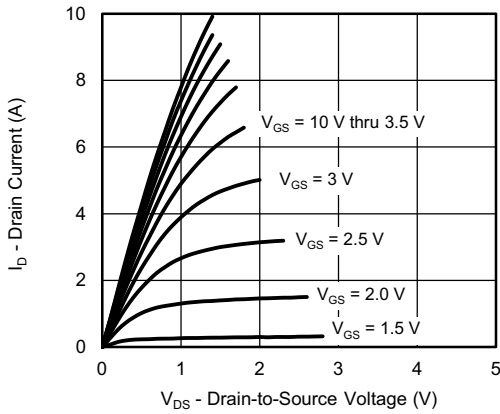
Normalized Thermal Transient Impedance, Junction-to-Ambient



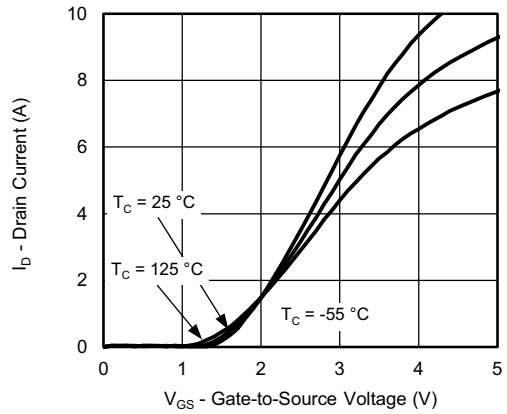
Normalized Thermal Transient Impedance, Junction-to-Foot



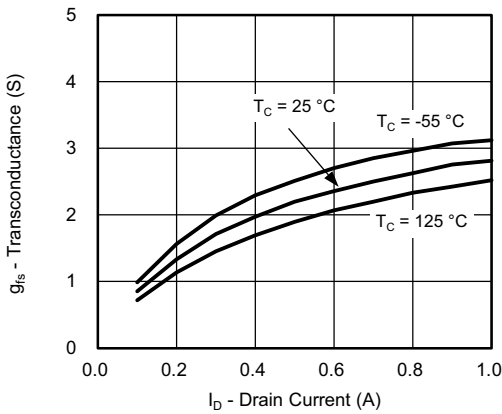
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



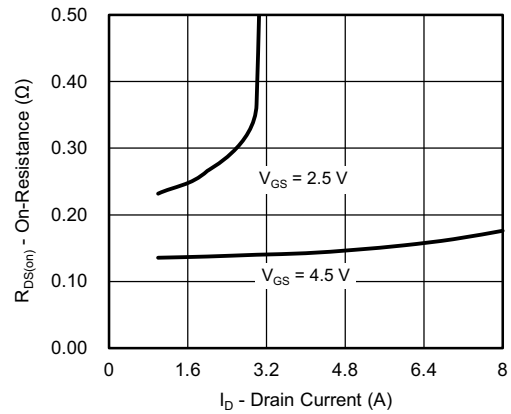
Output Characteristics



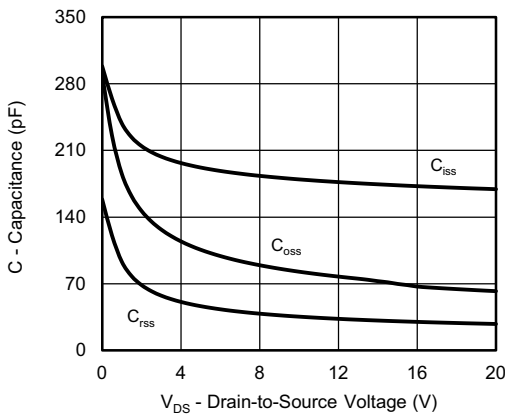
Transfer Characteristics



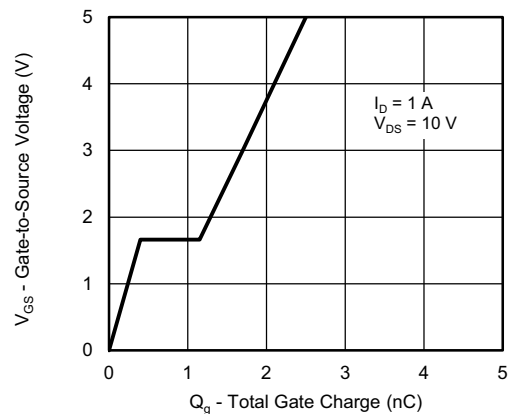
Transconductance



On-Resistance vs. Drain Current



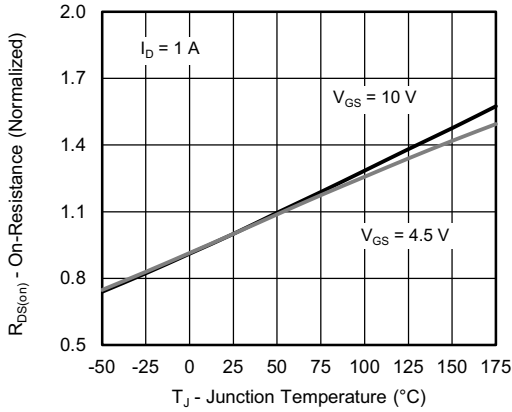
Capacitance



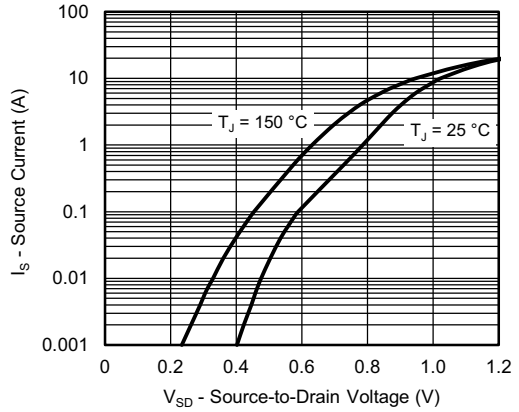
Gate Charge



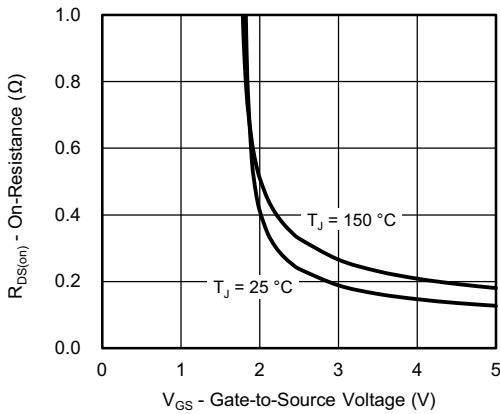
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



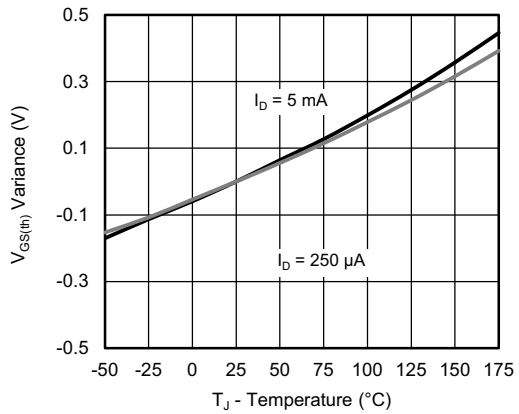
On-Resistance vs. Junction Temperature



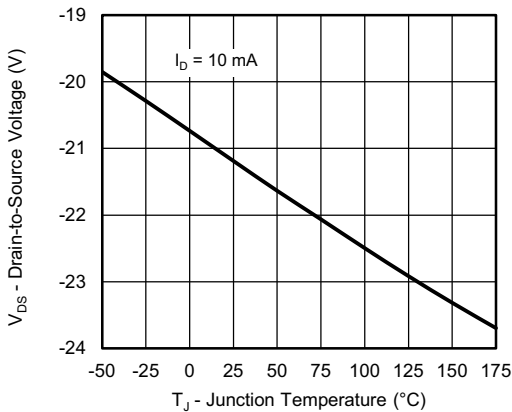
Source-Drain Diode Forward Voltage



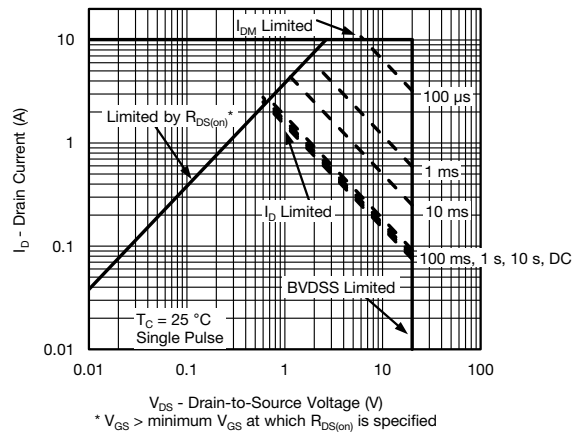
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



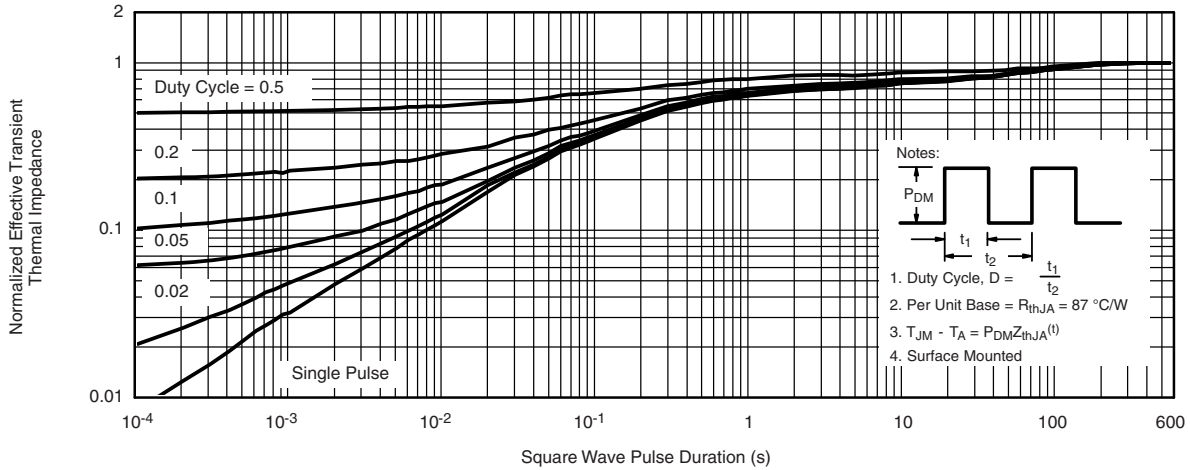
Drain Source Breakdown vs. Junction Temperature



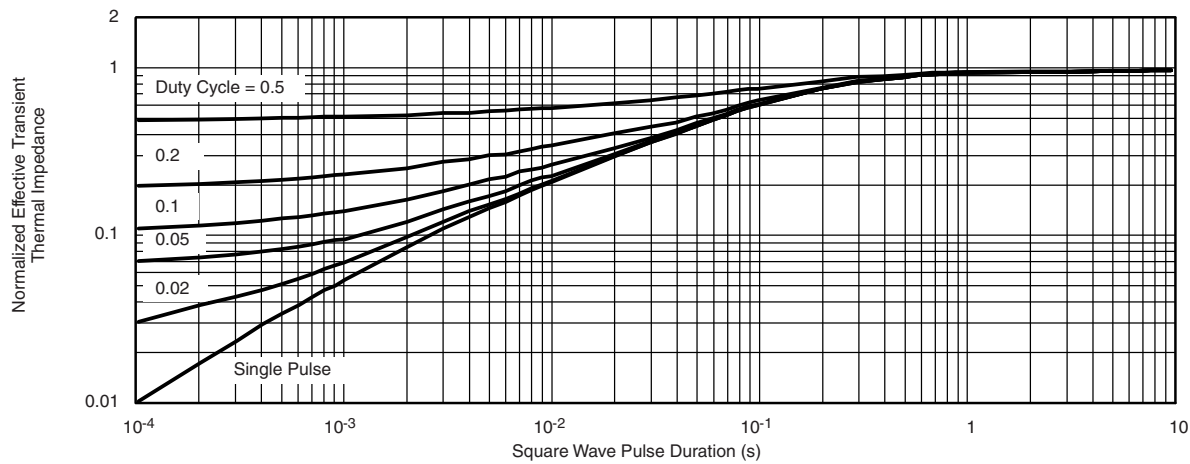
Safe Operating Area



P-CHANNEL TYPICAL CHARACTERISTICS (25 °C unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package / tape drawings, part marking, and reliability data, see www.vishay.com/ppg?75126.