

SPECIFICATION SHEET NO.	S1112 – LGE3M30065QL0T	
ORIGINAL MFG/PART NO.	 LGE Diodes/LGE3M30065Q-L	
NEXTGEN PART CODE	LGE3M30065QL0T	Indicate This Code For RFQ /Order
DATE	Nov. 12, 2025	
REVISION	A5	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>Silicon Carbide (SiC) Power MOSFET, 4 Pins, Case TO-247-4, LGE3M L Series, N-Channel, Drain-Source Voltage (V_{DS}): 650V Max.</p> <p>Current Drain-source On-state Resistance R_{DS(ON)}: 28mΩ Typ.</p> <p>Continuous Drain Current (I_D) @ T_c=25°C: 92A</p> <p>Operating Temperature: -55°C ~ 175°C (T_J)</p> <p>Package in Tube, 30pcs/Tube</p> <p>RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)</p>	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE		
Issued/Checked/Approved		
		
Effective Date: Nov. 12, 2025		

CUSTOMER APPROVE	
Date:	

MAIN FEATURE

- High Blocking Voltage with Low On-Resistance
- High Frequency Operation
- Fast Intrinsic Diode With Low Reverse Recovery
- Higher System Efficiency
- Parallel Device Convenience without Thermal Runaway
- High Temperature Application
- Hard Switching & Higher Reliability
- Meet MSL 1 Requirement
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



Image shown is a representation only. Exact specifications should be obtained from the product dimension.



APPLICATION

- Motor Drives
- Solar / Wind Inverters
- Onboard EV Charger
- Energy Storage
- Server & Telecom
- SMPS
- Uninterruptable Power Supplies

ELECTRICAL CHARACTERISTICS

- See Page 5 ~ Page 8.
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code LGE3M30065QL0T For RFQ and Order.

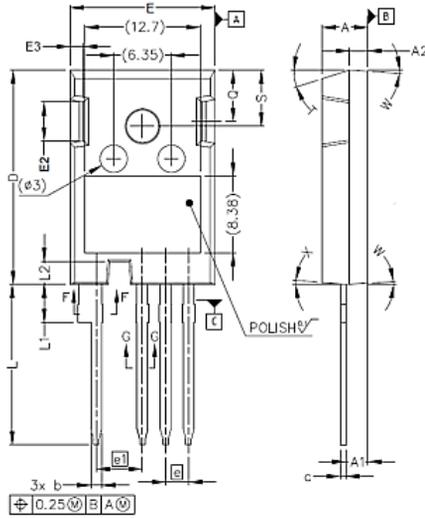
PART CODE GUIDE

RFQ
Request For Quotation

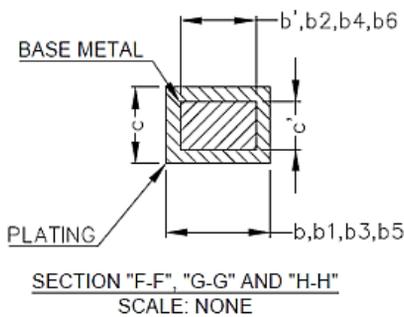
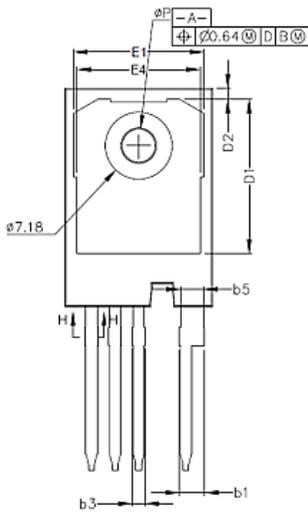
CODE	NAME	KEY SPECIFICATION OPTION
LGE3M	Product Series Code	Silicon Carbide (SiC) Power MOSFET, 4 Pins, Case TO-247-4, LGE3M L Series
30	Current Drain-source On-state Resistance R _{DS(ON)} Code	30: 28mΩ Typical
065	Drain-Source Voltage (V _{DS}) Code	065: 650V Max.
Q	Package Case Code	B: TO-247-3; E: TO-263-2; J: TO-263-7; Q: TO-247-4;
LOT	Internal Control Code	Letter A~Z, a-z or Digits (0-9)
XX	Special/Custom Parameters	Blank: N/A; XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

DIMENSION -- Unit: (mm), Case TO-247-4 Outline

Top View



Side View

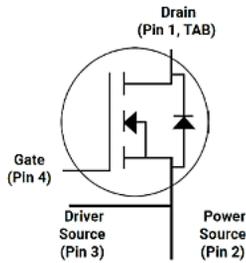


Note:

- 1.All Metal Surfaces: Tin Plated, except Area Of Cut
- 2.Dimensioning & Tolerancing Confirm To Asme Y14.5M-1994

SYMBOL	TO-247-4	
	Min.	Max.
A	4.83	5.21
A1	2.29	2.54
A2	1.91	2.16
b'	1.07	1.28
b	1.07	1.33
b1	2.39	2.94
b2	2.39	2.84
b3	1.07	1.60
b4	1.07	1.50
b5	2.39	2.69
b6	2.39	2.64
c'	0.55	0.65
c	0.55	0.68
D	23.30	23.60
D1	16.25	17.65
D2	0.95	1.25
E	15.75	16.13
E1	13.10	14.15
E2	3.68	5.10
E3	1.00	1.90
E4	12.38	13.43
e	2.54 BSC	
e1	5.08 BSC	
N	4	
L	17.31	17.82
L1	3.97	4.37
L2	2.35	2.65
ØP	3.51	3.65
Q	5.49	6.00
S	6.04	6.30
T	17.5° REF.	
W	3.5° REF.	
X	4° REF.	

INTERNAL CIRCUIT DIAGRAM



650V N-CHANNEL SiC MOSFET

VDS	ID @ Tc=25°C	R DS(on)	MARKING	PACKAGE/CASE
650V	92A	28mΩ	LGE3M30065Q	TO-247-4

MAX. RATINGS @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Drain-Source Voltage	V DS, Max	VGS=0V, ID=100μA	650	V
Gate-Source Voltage (Dynamic)	V GS, MAX	AC (f>1 Hz)	-8/+23	V
Gate-Source Voltage (Static)	V Gsop	Static	-4/+18	V
Continuous Drain Current	I D	VGS=18V, Tc=25°C	92	A
		VGS=18V, Tc=100°C	65	
Pulsed Drain Current	I D (pulse)	Tc=25°C	210	A
Short Circuit Capability	T sc	VDD=400V, VGS=18V	9	μS
Short Circuit Capability	I DS	VDD=400V, VGS=18V	400	A
Total Power Dissipation	P D	TC=25°C	326	W
Operating Junction Temperature	T J		-55~ +175	°C
Storage Temperature	T STG		-55~ +175	°C

ELECTRICAL CHARACTERISTICS PART I - T_c = 25°C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	V _{(BR) DSS}	V _{GS} =0V, I _D =100μA	650	-	-	V
Gates Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =10mA	2.0	2.7	4.0	V
		V _{DS} =V _{GS} , I _D =10mA, T _J =150°C	-	2.0	-	
		V _{DS} =V _{GS} , I _D =10mA, T _J =175°C	-	1.9	-	
Zero Gates Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	0	1	100	μA
Gates-Source Leakage Current	I _{GSS}	V _{GS} =18V, V _{DS} =0V	0	10	200	nA
Gates-Source Leakage Current	I _{GSS}	V _{GS} =-4V, V _{DS} =0V	-200	-10	0	nA
Drain-source On-state Resistance	R _{DS(ON)}	V _{GS} =15V, I _D =40A	-	39	-	mΩ
		V _{GS} =15V, I _D =40A, T _J =150°C	-	36	-	
		V _{GS} =15V, I _D =40A, T _J =175°C	-	39	-	
		V _{GS} =18V, I _D =40A	-	28	36	
		V _{GS} =18V, I _D =40A, T _J =150°C	-	32	-	
		V _{GS} =18V, I _D =40A, T _J =175°C	-	34	-	
Transconductance	g _{fs}	V _{DS} =20V, I _D =40A	-	20	-	S
		V _{DS} =20V, I _D =40A, T _J =150°C	-	20	-	
		V _{DS} =20V, I _D =40A, T _J =175°C	-	20	-	

ELECTRICAL CHARACTERISTICS PART II - $T_c = 25^\circ \text{C}$ (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Input Capacitance	C_{ISS}	$V_{DS}=400V, V_{GS}=0V$ $f = 1MHz$	-	3480	-	pF
Output Capacitance	C_{OSS}		-	295	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	13	-	pF
Coss Stored Energy	E_{OSS}		-	28	-	μJ
Total Gate Charge	Q_g	$V_{DS} = 400V,$ $V_{GS} = -4/18V$ $I_D = 40A$	-	163	-	nC
Gate-Source Charge	Q_{gs}		-	47	-	
Gate-Drain Charge	Q_{gd}		-	65	-	
Internal Gate Input Resistance	$R_{g(int)}$	$f = 1MHz,$ $I_D = 0A$	-	2.0	-	Ω
Turn - On Switching Energy	E_{on}	$V_{DS} = 400 V,$ $V_{GS} = -4V/18V,$ $I_D = 40A,$ $R_{G(ext)} = 2\Omega,$ $L = 200\mu H$	-	44	-	μJ
Turn - Off Switching Energy	E_{off}		-	46	-	μJ
Turn - On Delay Time	$t_{d(on)}$		-	12	-	ns
Rise Time	t_r		-	14	-	ns
Turn - Off Delay Time	$t_{d(off)}$		-	31	-	ns
Fall Time	t_f		-	7	-	ns
Avalanche Capability	E_{AS}		$V_{DD} = 100 V,$ $V_{GS} = 18V,$ $L = 1mH$	-	312	-
	I_{Av}	-		25	-	A

REVERSE DIODE CHARACTERISTICS - T_c = 25° C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Diode Forward Voltage	V _{SD}	V _{GS} = -4V, I _{SD} = 20A	-	3.9	-	V
		V _{GS} = -4V, I _{SD} = 20A, T _J = 150°C	-	3.5	-	
		V _{GS} = -4V, I _{SD} = 20A, T _J = 175°C	-	3.4	-	
Continuous Diode Forward Current	I _S	V _{GS} = -5V	-	62	-	A
Reverse Recovery Time	T _{rr}	V _{GS} = -4V, I _{SD} = 40A, V _R = 400V, dif/dt = 3300 A/μs	-	23	-	nS
Reverse Recovery Charge	Q _{rr}		-	430	-	nC
Peak Reverse Recovery Current	I _{rrm}		-	32	-	A

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX.	
Thermal Resistance (Per Device)	R _{th(j-c)}	Junction-case	-	0.37	0.46	°C/W

TYPICAL PERFORMANCE (For Reference Only)

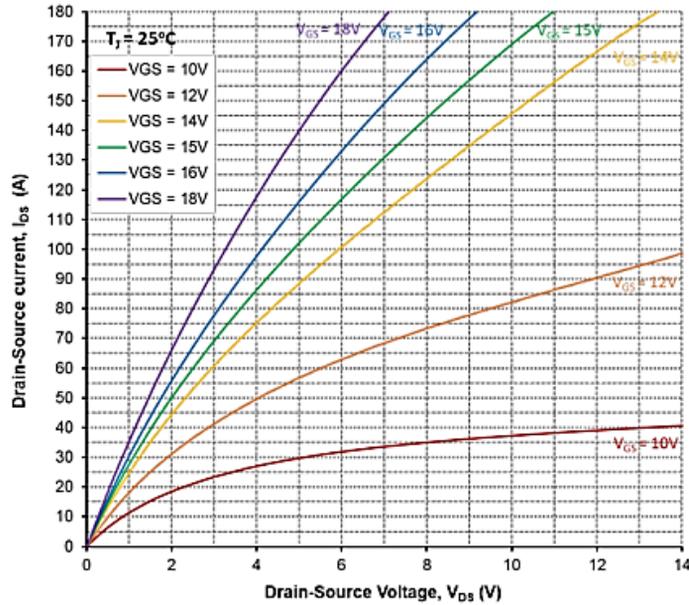


Figure 1. Output Characteristics, $T_J = 25^\circ\text{C}$

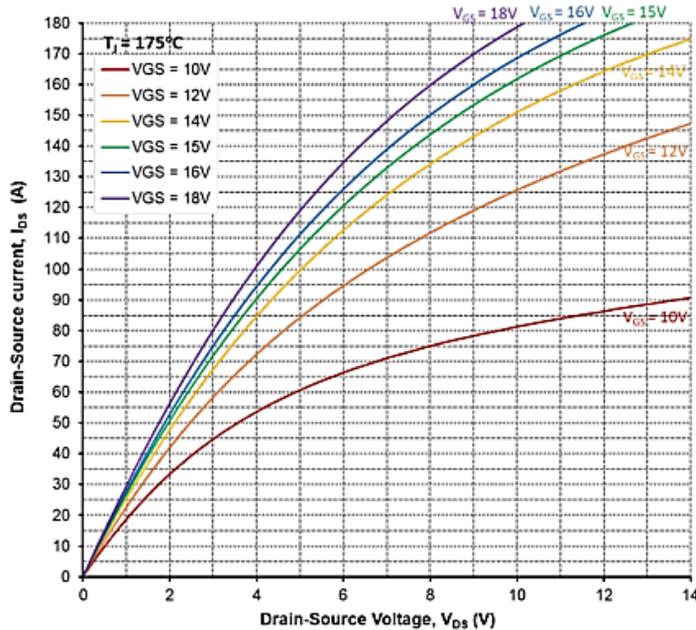


Figure 2. Output Characteristics, $T_J = 175^\circ\text{C}$

TYPICAL PERFORMANCE (For Reference Only)

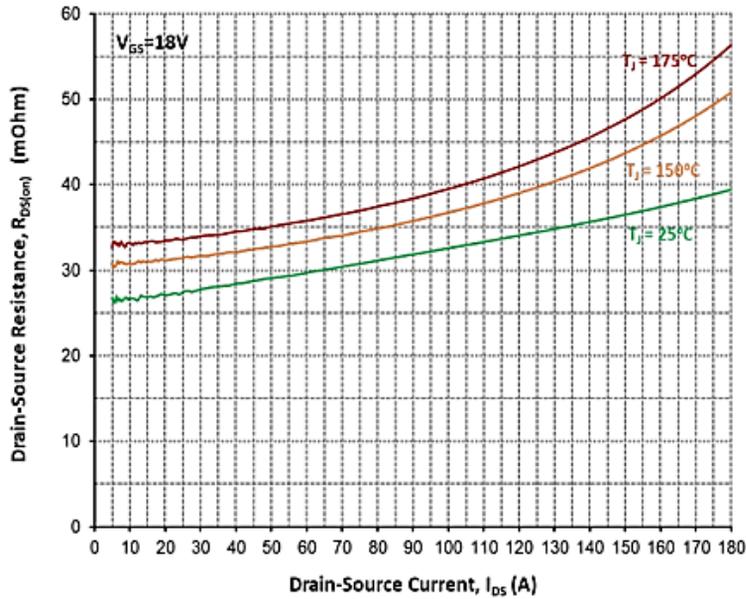


Figure 3. On-Resistance vs. Drain Current For Various Temperatures

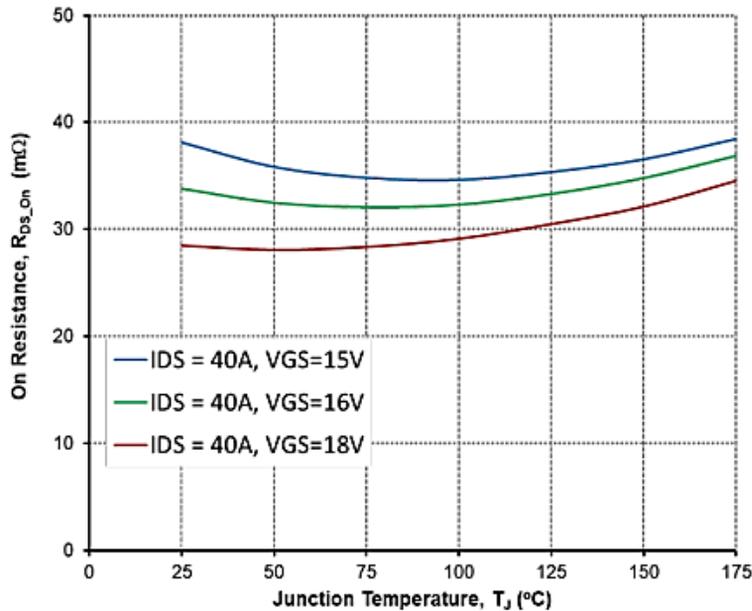


Figure 4. On-Resistance vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

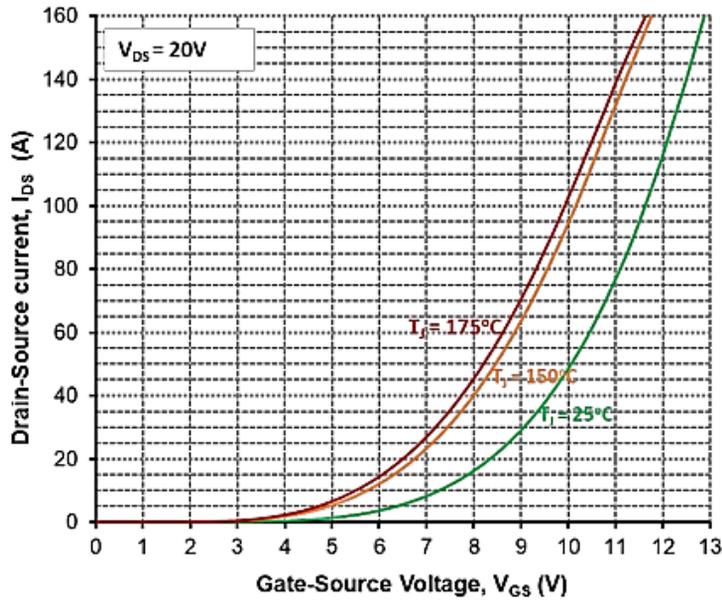


Figure 5. Transfer Characteristic For Various Junction Temperatures

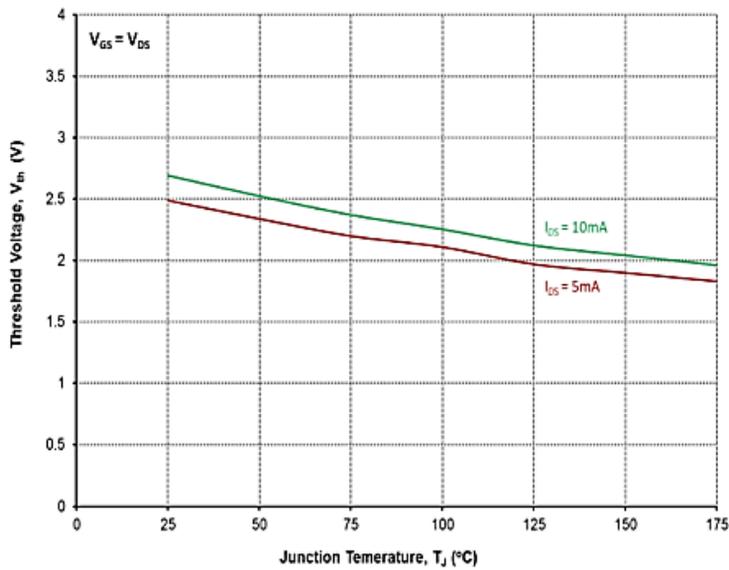


Figure 6. Threshold Voltage vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

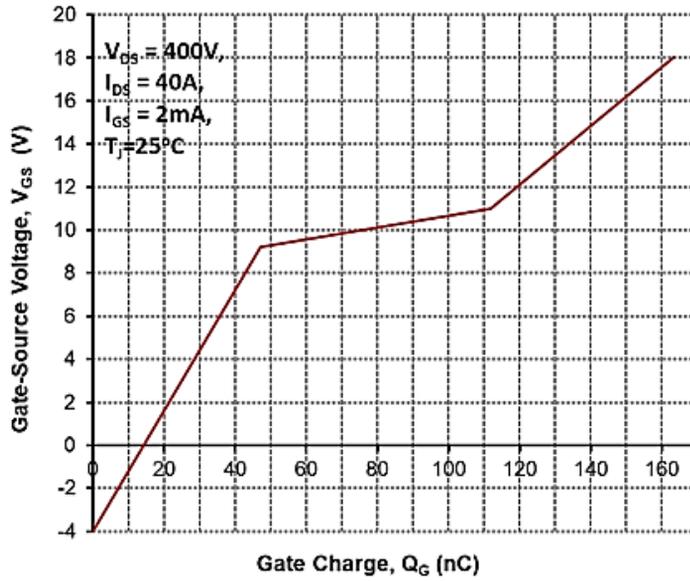


Figure 7. Gate Charge Characteristics

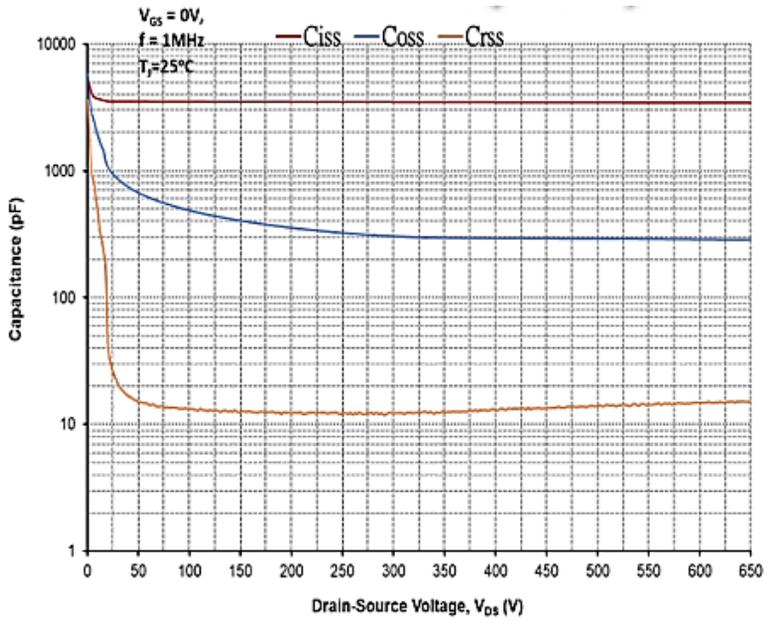


Figure 8. Capacitances vs. Drain-Source Voltage (0-650V)

TYPICAL PERFORMANCE (For Reference Only)

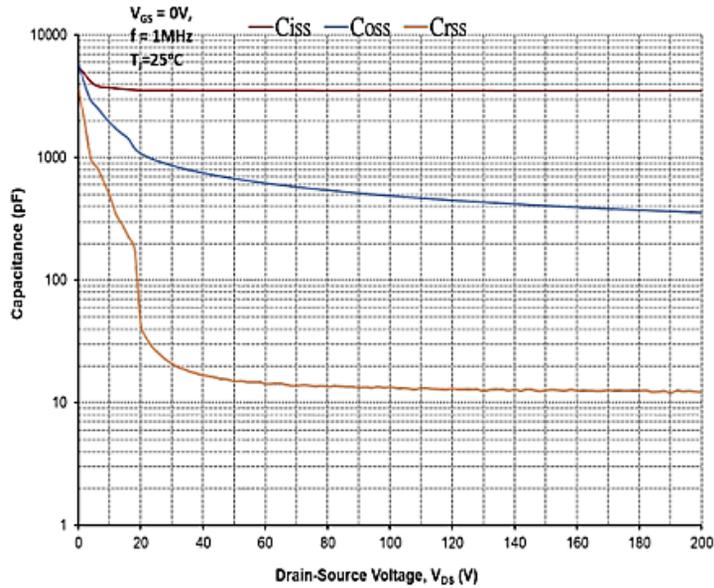


Figure 9. Capacitances vs. Drain-Source Voltage (0-200V)

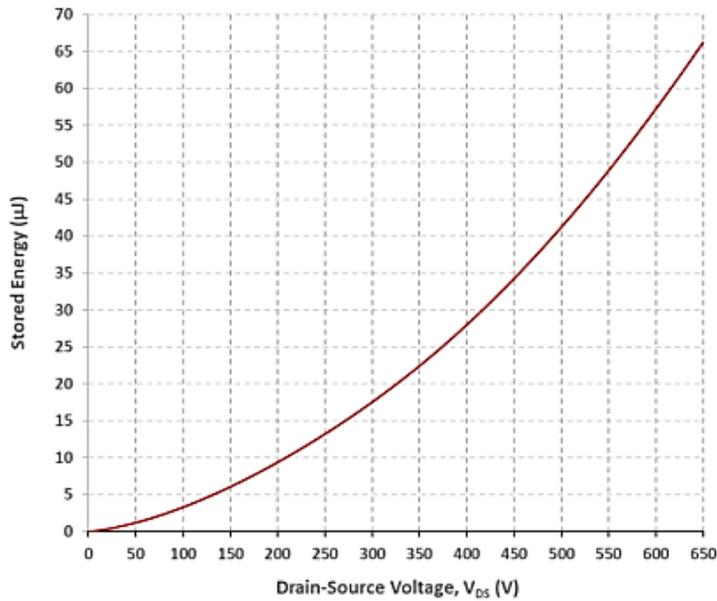


Figure 10. Output Capacitor Stored Energy

TYPICAL PERFORMANCE (For Reference Only)

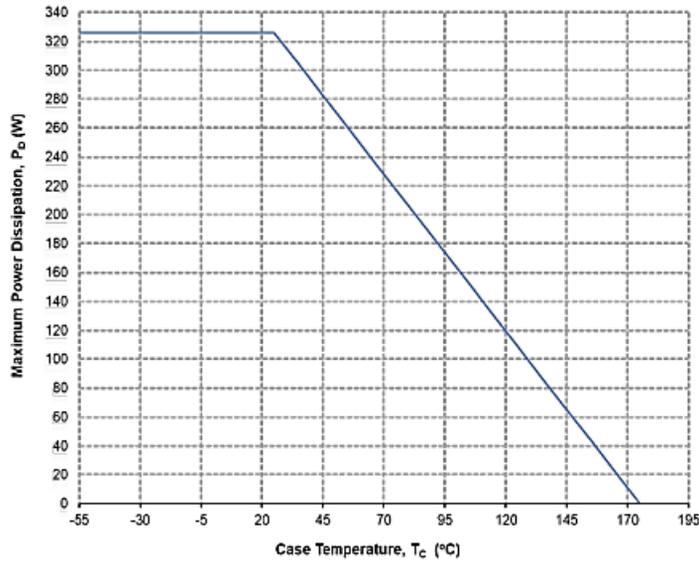


Figure 11. Maximum Power Dissipation Derating vs. Case Temperature

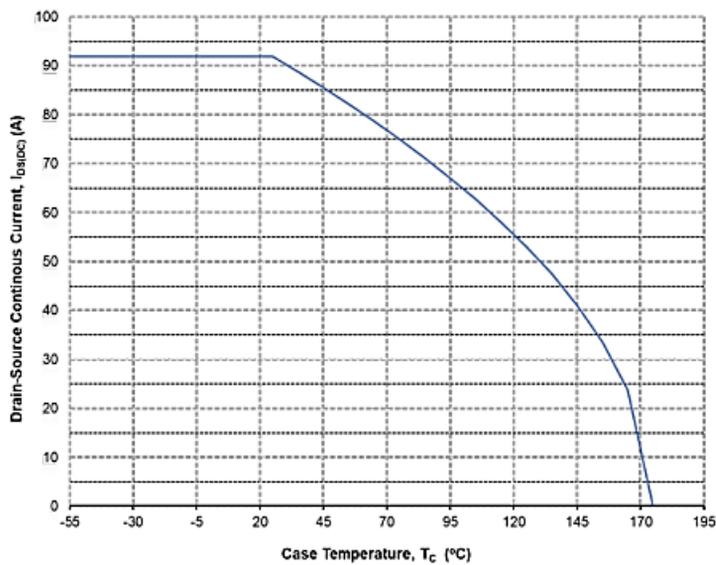


Figure 12. Continuous Drain Current Derating vs. Case Temperature

TYPICAL PERFORMANCE (For Reference Only)

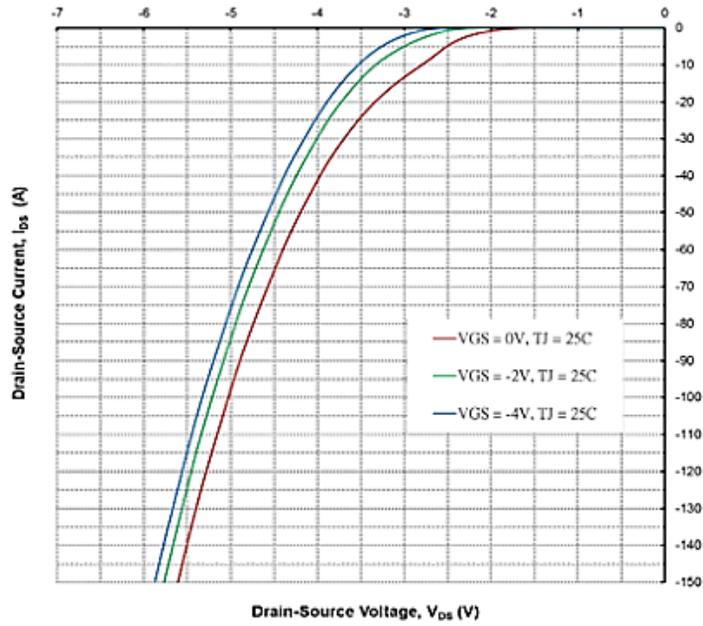


Figure 13. Body Diode Characteristics @ 25°C

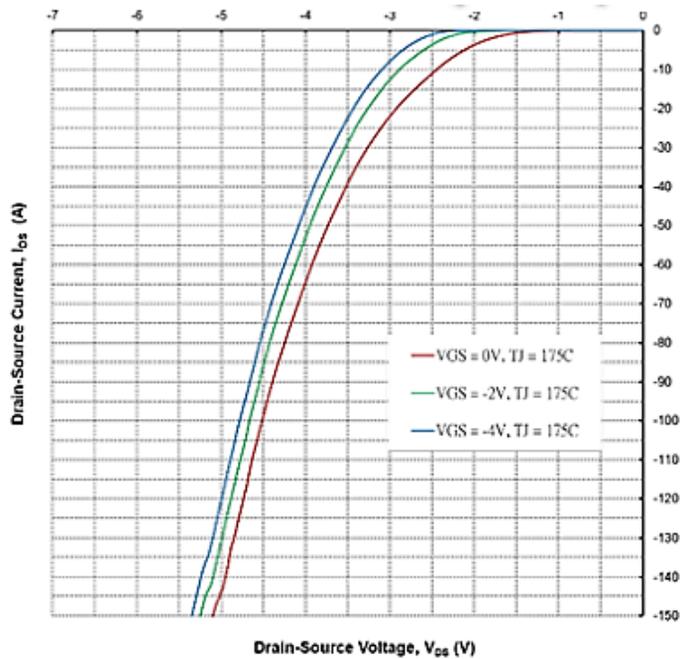


Figure 14. Body Diode Characteristics @ 175°C

TYPICAL PERFORMANCE (For Reference Only)

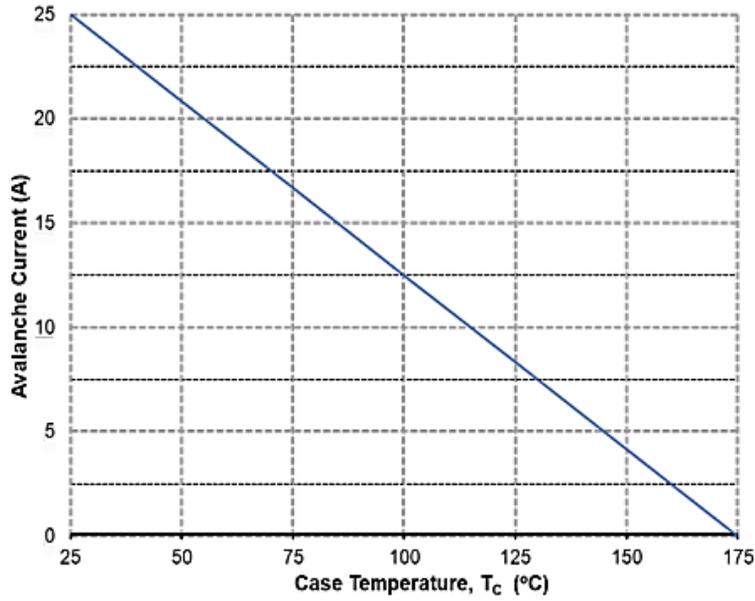


Figure 15. Single Avalanche vs. Temperature

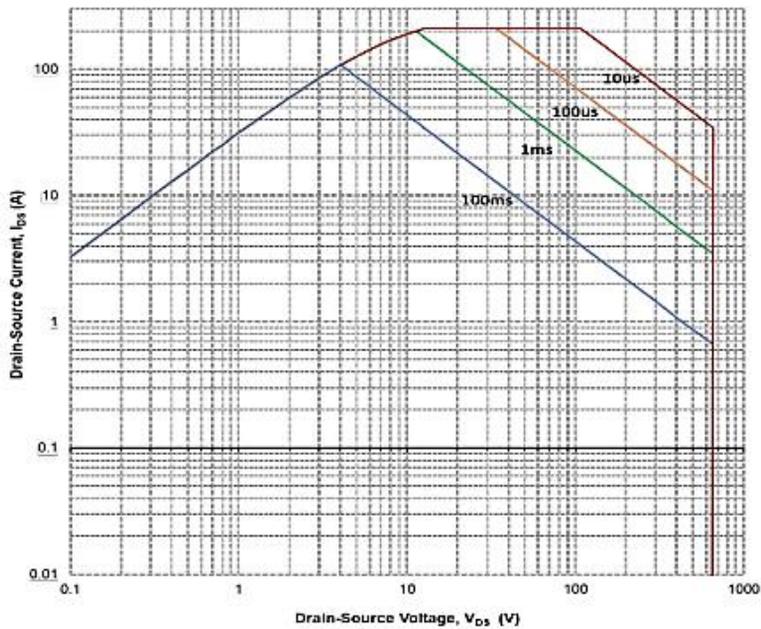
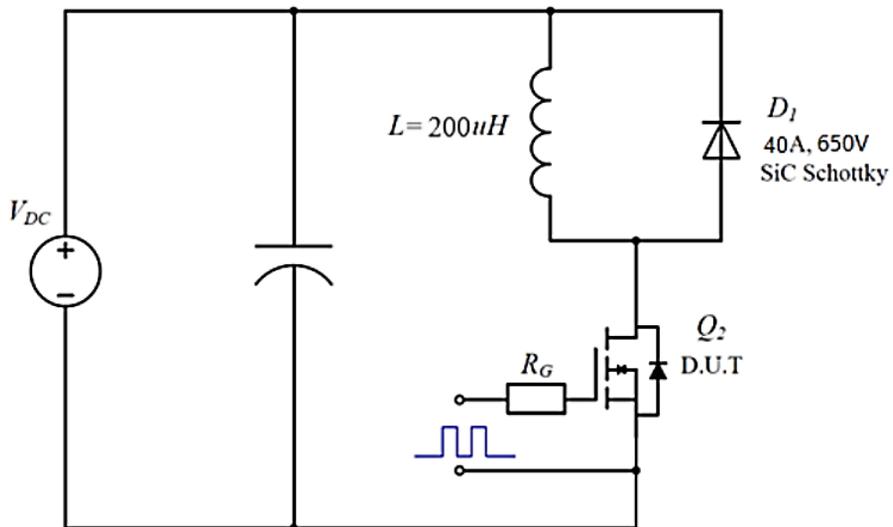
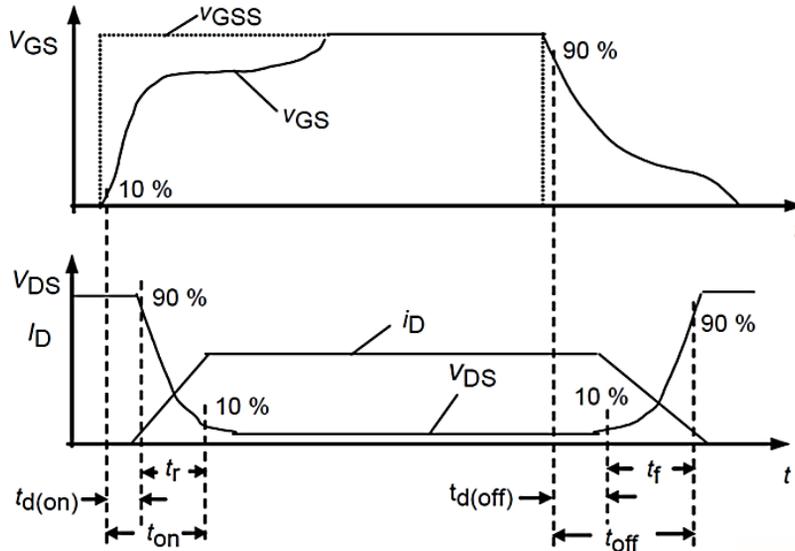


Figure 16. Safe Operating Area

SWITCHING TIMES DEFINITION AND TEST CIRCUIT



IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
4. NextGen Component, Inc (*NextGen*) reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.
5. *NextGen* makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does *NextGen* assume any liability for application assistance or customer product design.
6. *NextGen* does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application. No license is granted by implication or otherwise under any intellectual property rights of NextGen.
7. *NextGen* products are not authorized for use as critical components in life support devices or systems without express written approval by *NextGen*.
8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.