

SPECIFICATION SHEET NO.	S1107 – LGE3M80120BLOT	
ORIGINAL MFG/PART NO.	 LGE Diodes/LGE3M80120B -L	
NEXTGEN PART CODE	LGE3M80120BLOT	Indicate This Code For RFQ /Order
DATE	Nov. 07, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>Silicon Carbide (SiC) MOSFET, 3 Pins, Case TO-247-3, LGE3M L Series, N-Channel, Drain-Source Voltage (V_{DS}): 1200V Drain-Source On-State Resistance R_{DS(ON)}: 80mΩ Continuous Drain Current (I_D) @ T_c=25°C: 40A Operating Temperature: -55°C ~ 175°C (T_J) Package in Tube, 30pcs/Tube 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. 07, 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
- Easy To Drive
- 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
- EV Charging Station
- AC/DC converters & DC/DC converters
- Uninterruptable power supplies

ELECTRICAL CHARACTERISTICS

- See Page 5 ~ Page 7.
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code LGE3M80120BL0T For RFQ and Order.

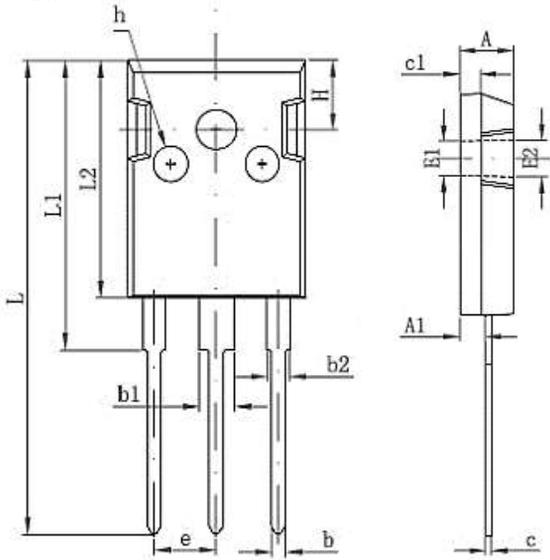
PART CODE GUIDE

RFQ
[Request For Quotation](#)

CODE	NAME	KEY SPECIFICATION OPTION
LGE3M	Product Series Code	Silicon Carbide (SiC) MOSFET, 3 Pins, Case TO-247-3, LGE3M L Series
80	Drain-Source On-State (V _{DS}) Resistance R _{DS(ON)} Code	80: 80mΩ
120	Drain-Source Voltage (V _{DS}) Code	120: 1200V Max.
B	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

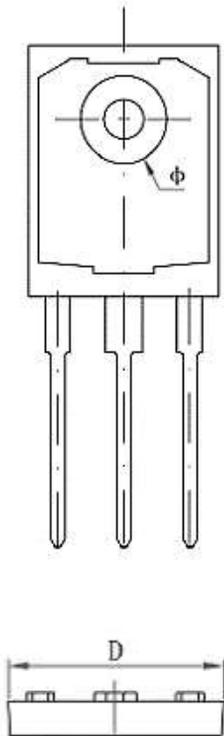
DIMENSION -- Unit: (mm), Case TO-247-3 Outline

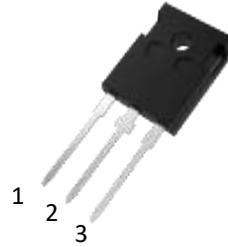
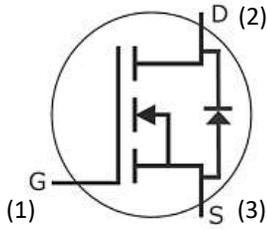
Top View



SYMBOL	TO-247-3	
	Min.	Max.
A	4.85	5.15
A1	2.2	2.6
b	1.0	1.4
b1	2.8	3.2
b2	1.8	2.2
c	0.5	0.7
c1	1.9	2.1
D	15.45	15.75
E1	3.5REF	
E2	3.6REF	
L	40.9	41.3
L1	24.8	25.1
L2	20.3	20.6
φ	7.1	7.3
e	5.45TYP	
H	5.98REF	
h	0	0.3

Side View



INTERNAL CIRCUIT DIAGRAM

1200V N-CHANNEL SiC MOSFET

VDS	ID @ Tc=25°C	R DS(on)	MARKING	PACKAGE/CASE
1200V	40A	80mΩ	LGE3M80120B	TO-247-3

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

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Drain-Source Voltage	V DSMax	VGS=0V, ID=100μA	1200	V
Gate-Source Voltage(dynamic)	V GSMax	AC (f>1 Hz)	-10/+25	V
Gate-Source Voltage(static)	V Gsop	static	-5/+20	V
Continuous Drain Current	I D	VGS=20V, Tc=25°C	40	A
		VGS=20V, Tc=100°C	28	
Pulsed Drain Current	I D (pulse)	Tc=25°C	80	A
Short Circuit Capability	t sc	VDD =800V, VGS =20V	3.5	μS
Short Circuit Capability	I DS	VDD =800V, VGS =20V	260	A
Total Power Dissipation	P D	Tc=25°C	208	W
Operating Junction Temperature Range	T J		-55 ~ +175	°C
Storage Temperature Range	T STG		-55 ~ +150	°C

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

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	V (BR) DSS	VGS=0V ID=100µA	1200	-	-	V
Gates Threshold Voltage	V GS(th)	VDS=VGS, ID=5mA	1.8	3.0	3.7	V
		VDS=VGS, ID=5mA, TJ=150°C	-	2.2	-	
		VDS=VGS, ID=5mA, TJ=175°C	-	2.1	-	
Zero Gates Voltage Drain Current	I DSS	VDS=1200, VGS=0V	0	5	100	µA
Gates-Source Leakage Current	I GSS	VGS=20V, VDS=0V	0	10	200	nA
		VGS=-5V, VDS=0V	-200	-10	0	nA
Drain-Source On-State Resistance	R DS (ON)	VGS=20V, ID=20A	-	78	98	Ω
		VGS=20V, ID=20A, TJ=150°C	-	116	-	
		VGS=20V, ID=20A, TJ=175°C	-	129	-	
Transconductance	g fs	VGS=20V, ID=20A	-	9.3	-	S
		VGS=20V, ID=20A, TJ=150°C	-	9	-	
		VGS=20V, ID=20A, TJ=175°C	-	8.9	-	
Input Capacitance	C iss	VGS=0V, VDS=1000V, f=1MHz	-	1390	-	pF
Output Capacitance	C oss		-	70	-	pF
Reverse Transfer Capacitance	C rss		-	7	-	pF
Coss Stored Energy	E oss		-	45	-	µJ
Turn-On Switching Energy	E on	VDS=800V, VGS=-5V/20V, ID=20A, R G(ext) =1Ω, L=450µH	-	380	-	µJ
Turn-Off Switching Energy	E off		-	220	-	µJ
Turn-On Delay Time	t d (on)		-	7	-	ns
Rise Time	t r		-	33	-	ns
Turn-Off Delay Time	t d(off)		-	21	-	ns
Fall Time	t f		-	24	-	ns

ELECTRICAL CHARACTERISTICS PART II - @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Internal Gate Input Resistance	R _{g(int)}	f=1MHz, I _D =0A	-	2.2	-	Ω
Gate to Source Charge	Q _{GS}	V _{DS} =800V, V _{GS} =-5V/20V I _D =20A	-	10	-	nC
Gate to Drain Charge	Q _{GD}		-	36	-	nC
Total Gate Charge	Q _G		-	76	-	nC
Avalanche Capability	EAS	V _{DD} =100V, V _{GS} =20V, L=2mH	-	670	-	mJ
	IA		-	26	-	A

REVERSE DIODE CHARACTERISTICS @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Diode Forward Voltage	V _{SD}	V _{GS} =-5V, I _{SD} =1A	-	4.1	-	V
		V _{GS} =-5V, I _{SD} =1A, T _J =150°C	-	3.7	-	
		V _{GS} =-5V, I _{SD} =1A, T _J =175°C	-	3.6	-	V
Continuous Diode Forward Current	I _S	V _{GS} =-5V	-	35		A
Reverse Recovery Time	t _{rr}	V _{GS} = -5V, V _R =800V, I _{SD} =20A, dif/dt = 2600 A/μs	-	30	-	ns
Reverse Recovery Charge	Q _{rr}		-	250	-	nC
Peak Reverse Recovery Current	I _{rrm}		-	15	-	A

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX.	
Thermal Resistance	R _{th(j-c)}	junction-case	-	0.55	0.72	°C/W

TYPICAL PERFORMANCE (For Reference Only)

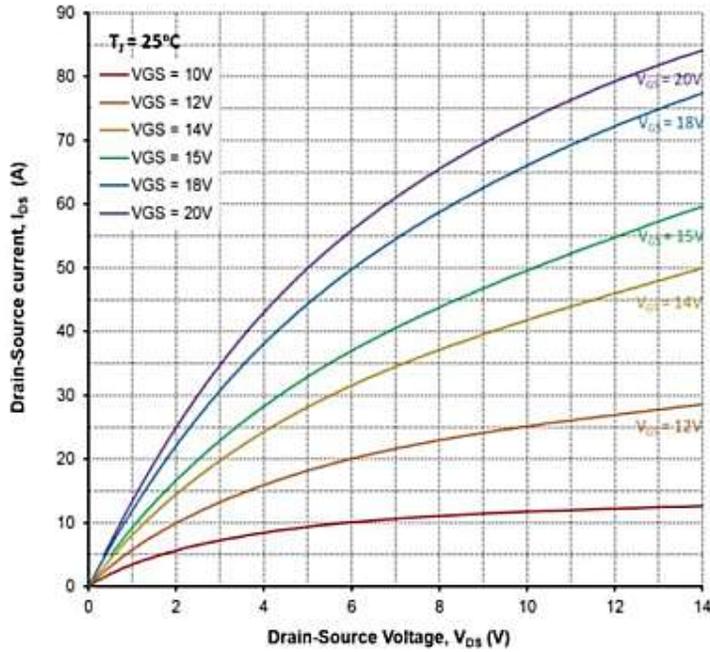


Figure 1. Output Characteristics, T_J = 25°C

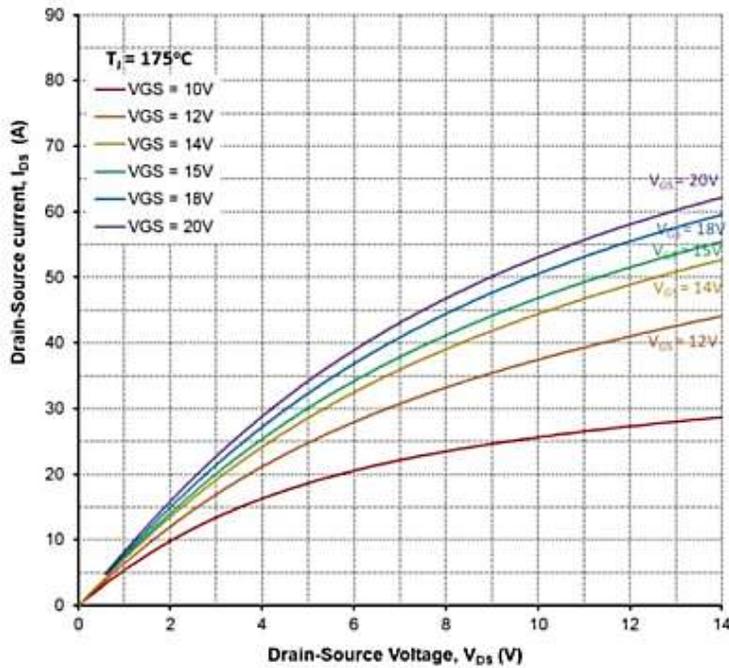


Figure 2. Output Characteristics, T_J = 175°C

TYPICAL PERFORMANCE (For Reference Only)

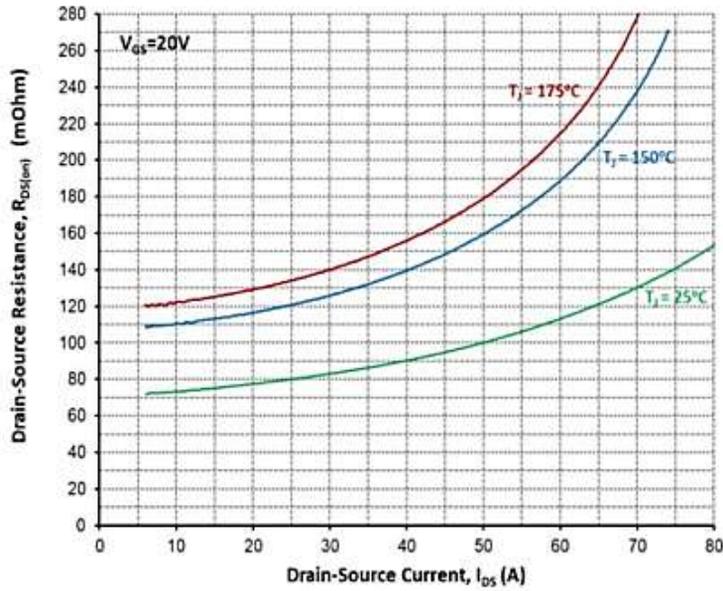


Figure 3. On-Resistance vs. Drain Current For Various Temperatures

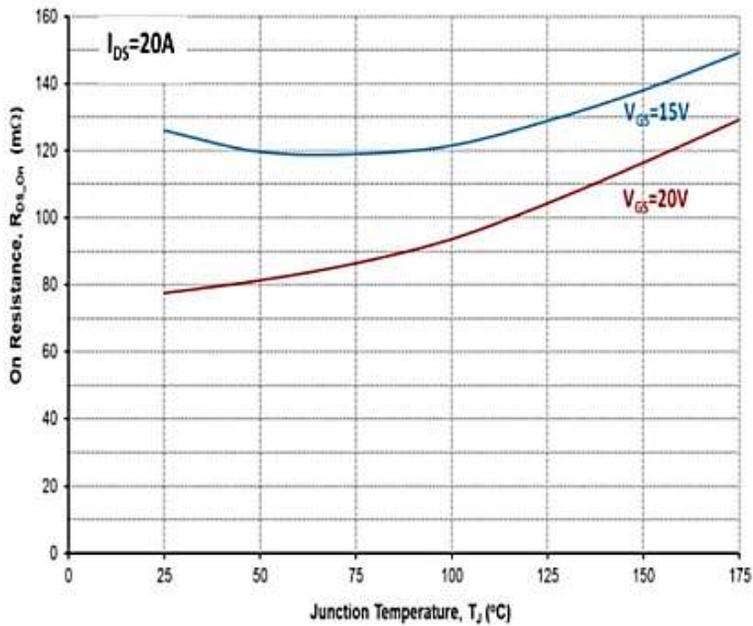


Figure 4. On-Resistance vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

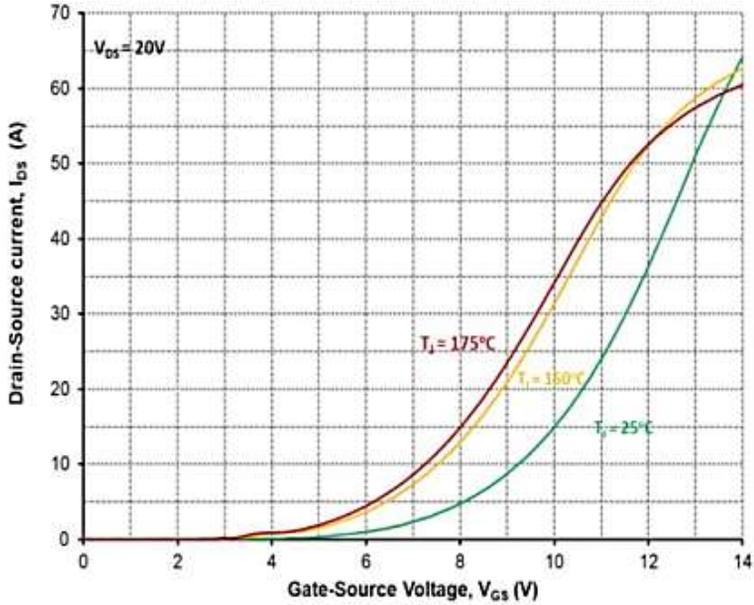


Figure 5. Transfer Characteristic For Various Junction Temperatures

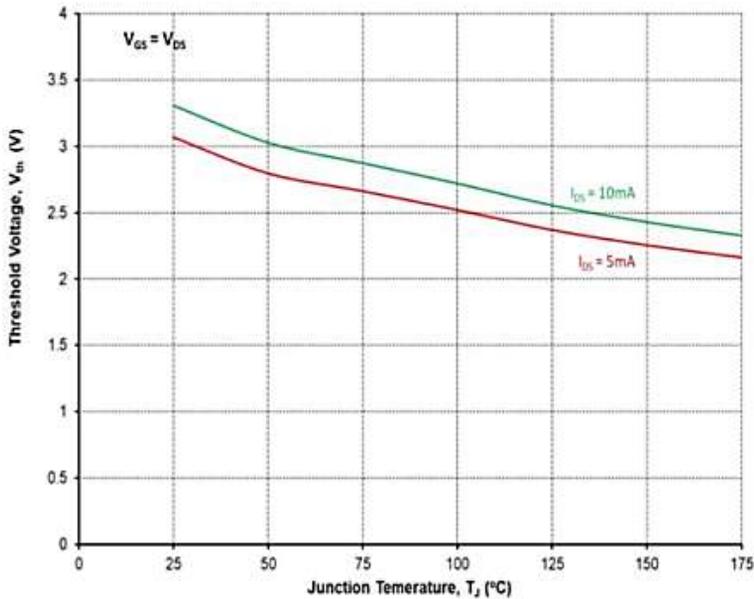


Figure 6. Threshold Voltage vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

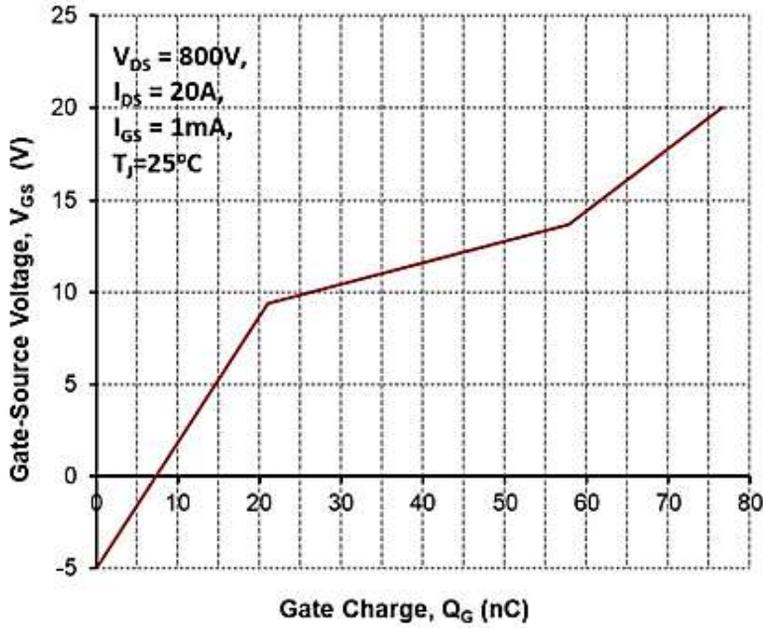


Figure 7. Gate Charge Characteristics

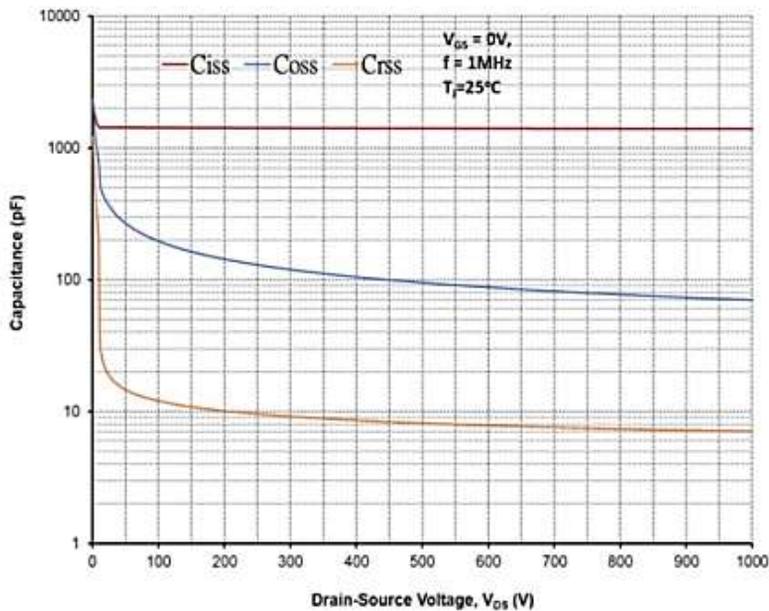


Figure 8. Capacitances vs. Drain-Source Voltage (0-1000V)

TYPICAL PERFORMANCE (For Reference Only)

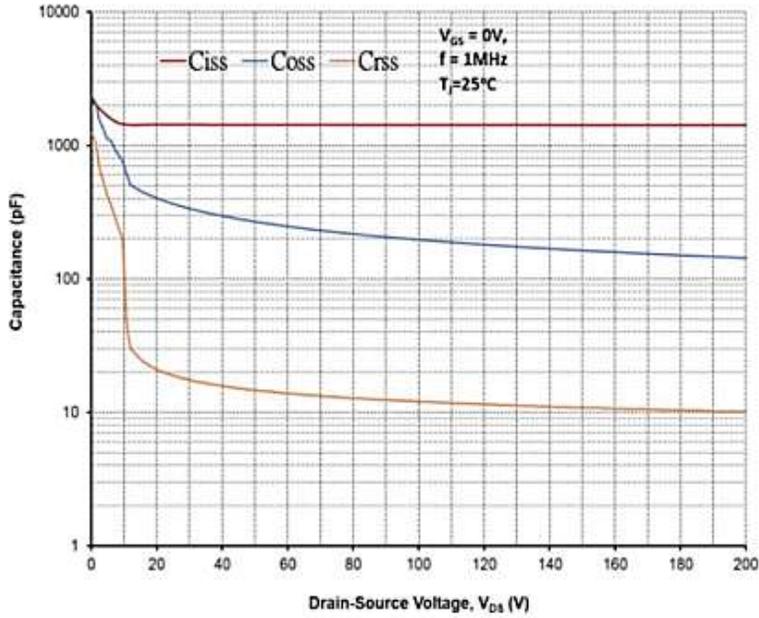


Figure 9. Capacitances vs. Drain-Source Voltage (0-200V)

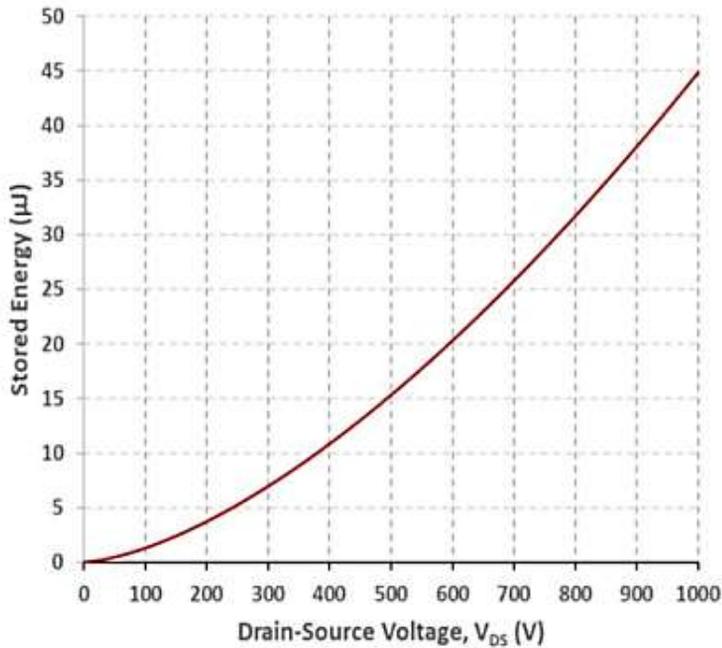


Figure 10. Output Capacitor Stored Energy

TYPICAL PERFORMANCE (For Reference Only)

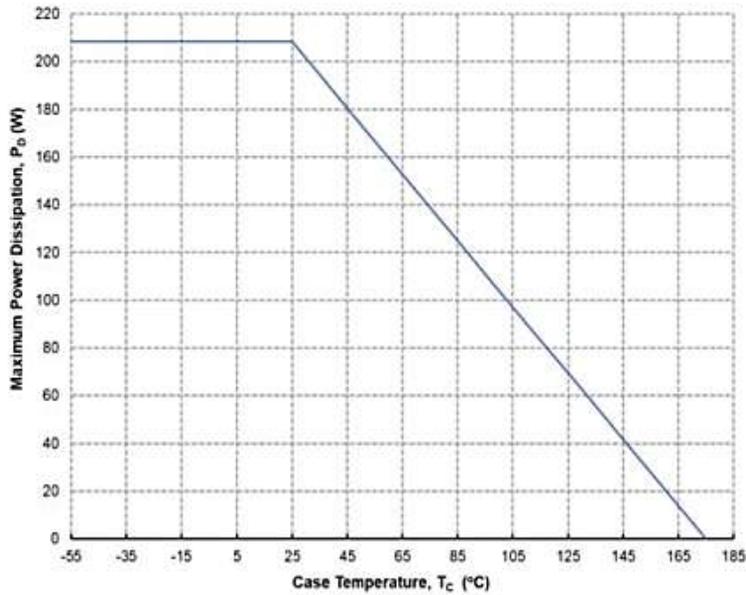


Figure 11. Maximum Power Dissipation Derating vs. Case Temperature

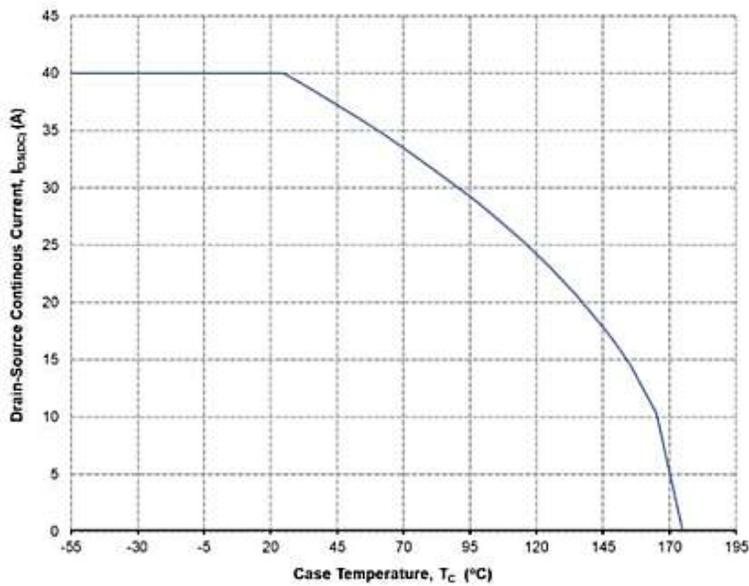


Figure 12. Continuous Drain Current Derating vs. Case Temperature

TYPICAL PERFORMANCE (For Reference Only)

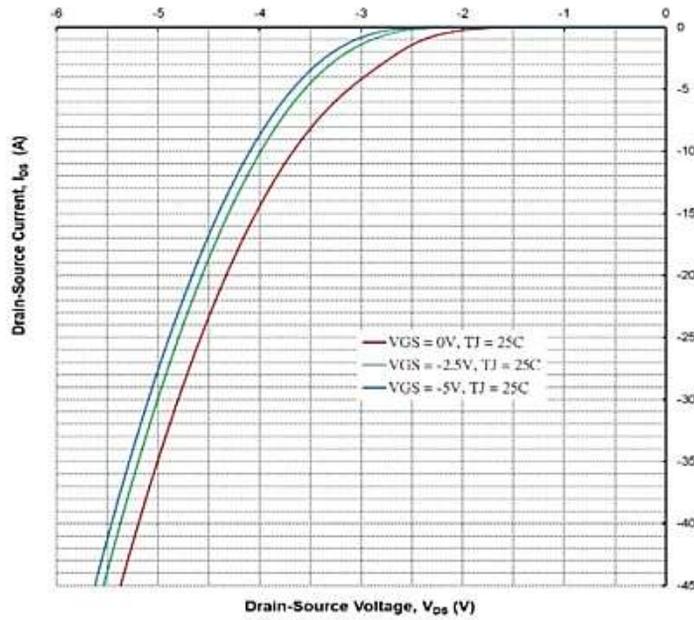


Figure 13. Body Diode Characteristics @ 25°C

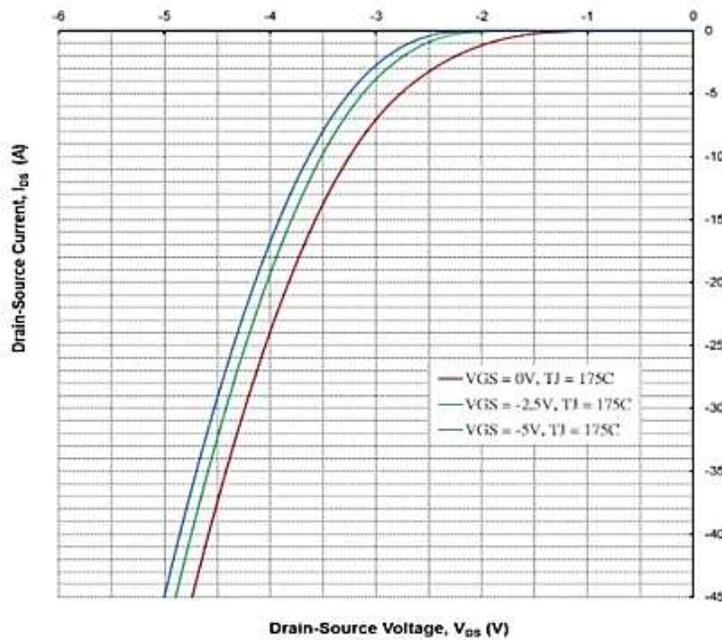


Figure 14. Body Diode Characteristics @ 175°C

TYPICAL PERFORMANCE (For Reference Only)

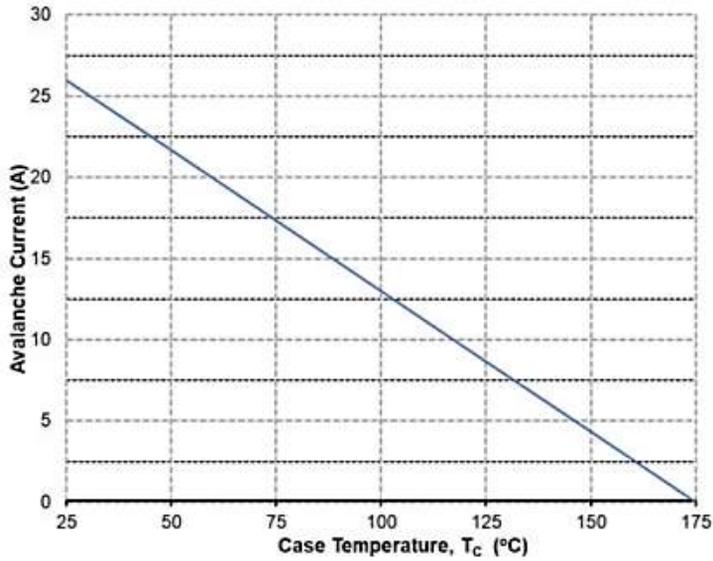


Figure 15. Single Avalanche vs. Temperature

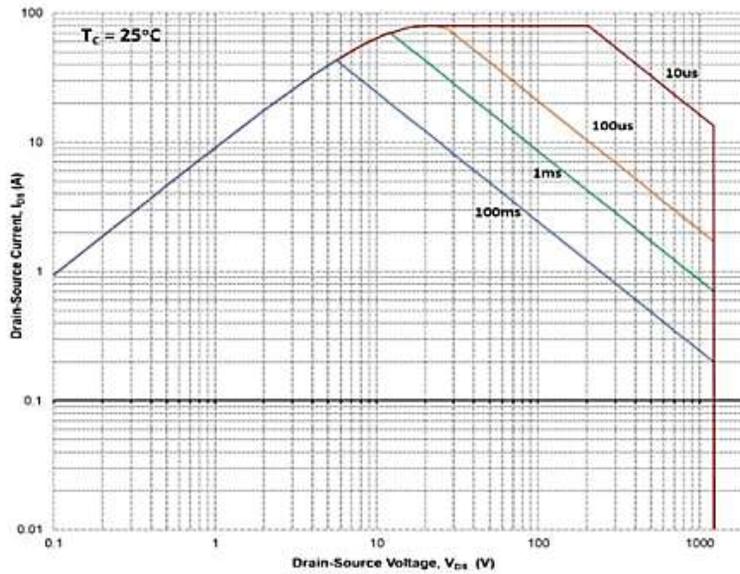
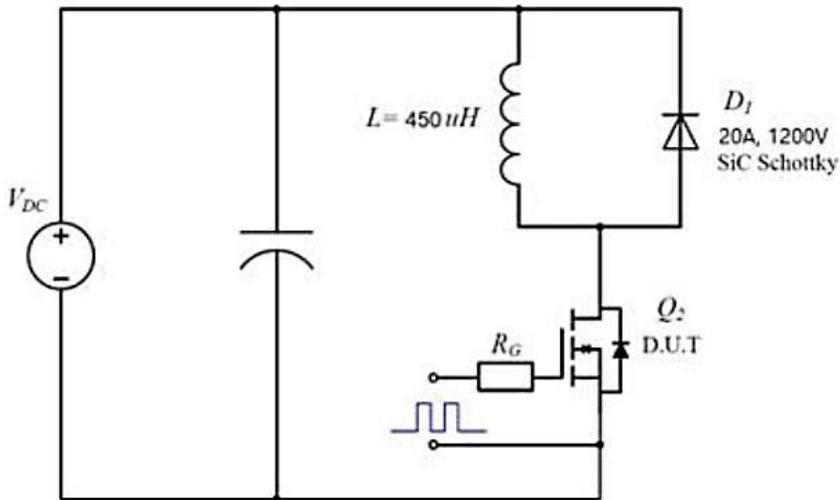
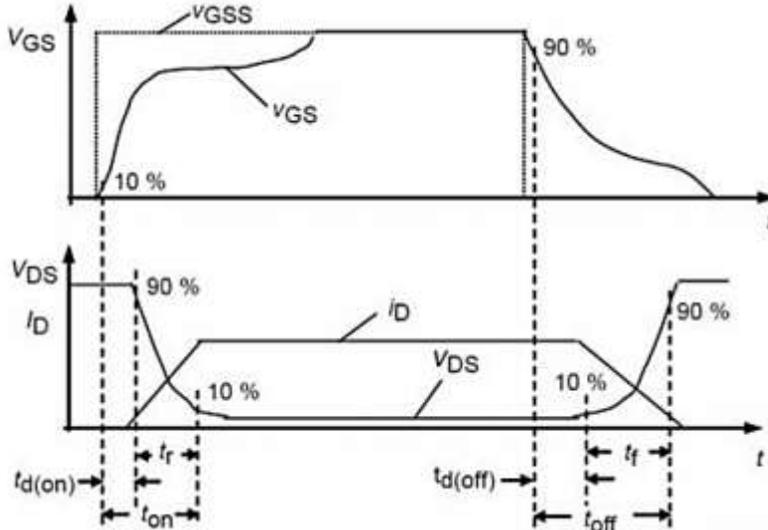


Figure 16. Safe Operating Area

SWITCHING TIMES DEFINITION AND TEST CIRCUIT (For Reference Only)



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.