

SPECIFICATION SHEET NO.	S1111 – LGE3M25120QL0T	
ORIGINAL MFG/PART NO.	 LGE Diodes/LGE3M25120Q-L	
NEXTGEN PART CODE	LGE3M25120QL0T	Indicate This Code For RFQ /Order
DATE	Nov. 11, 2025	
REVISION	A4	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>Silicon Carbide (SiC) MOSFET, 4 Pins, Case TO-247-4, LGE3M L Series, N-Channel, Drain-Source Voltage (V_{DS}): 1200V Max.</p> <p>Current Drain-source On-state Resistance R_{DS(ON)}: 25mΩ Typ.</p> <p>Continuous Drain Current (I_D) @ T_c=25°C: 90A</p> <p>Operating Temperature: -55°C ~ 150°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. 11, 2025		

CUSTOMER APPROVE	
Date:	

MAIN FEATURE

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive
- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency
- 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

- Power Supplies
- High Voltage DC/DC Converters
- Motor Drives
- Switch Mode Power Supplies
- Pulsed Power Applications

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 LGE3M25120QL0T For RFQ and Order.

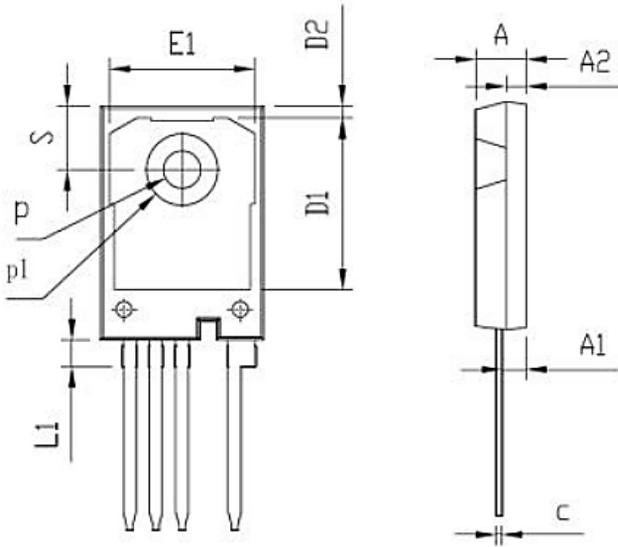
PART CODE GUIDE

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
25	Current Drain-source On-state Resistance R _{DS(ON)} Code	25: 25mΩ
120	Drain-Source Voltage (V _{DS}) Code	120: 1200V 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

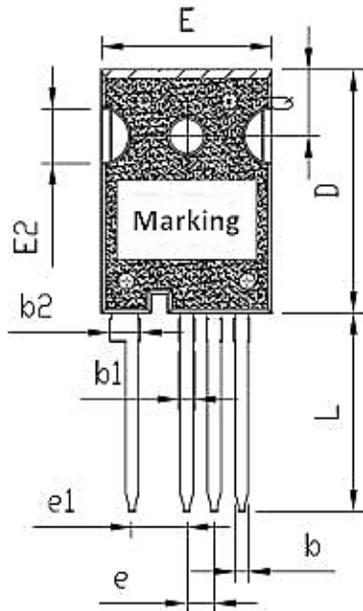
DIMENSION -- Unit: (mm), Case TO-247-4 Outline

Top View

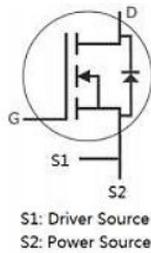


SYMBOL	TO-247-4		
	Min.	NOM	Max.
A	-	5.00	-
A1	-	2.40	-
A2	-	2.00	-
b	-	1.20	-
b1	-	1.30	-
b2	-	2.65	-
c	-	0.60	-
D	-	22.54	-
D1	-	16.50	-
D2	-	1.17	-
e	-	2.54	-
e1	-	5.08	-
E	-	15.80	-
E1	-	14.0	-
E2	-	5.0	-
L	-	18.38	-
L1	-	2.58	-
p	-	3.60	-
p1	-	6.8	-
Q	-	6.15	-
S	-	6.15	-

Side View



INTERNAL CIRCUIT DIAGRAM



1200V N-CHANNEL SiC MOSFET

VDS	ID @ Tc=25°C	R DS(on)	MARKING	PACKAGE/CASE
1200V	90A	25mΩ	LGE3M25120Q	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	1200	V
Gate-Source Voltage	V GS, MAX	Absolute maximum values	-10/+25	V
Gate-Source Voltage	V Gsop	Recommended operational values	-5/+20	V
Continuous Drain Current	I D	VGS=20V, Tc=25°C	90	A
		VGS=20V, Tc=100°C	60	
Pulsed Drain Current	I D (pulse)	Pulse width tp limited by TJmax	200	A
Power Dissipation	P D	Tc=25°C, TJ=150°C	370	W
Operating Junction Temperature	T J		-55~ +150	°C
Storage Temperature	T STG		-55~ +150	°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	1200	-	-	V
Gates Threshold Voltage Note Fig.11	V _{GS(th)}	V _{DS} =V _{GS} , I _D =15mA	1.9	2.4	4.0	V
		V _{DS} =V _{GS} , I _D =15mA, T _J =150°C	-	1.7	-	
Zero Gates Voltage Drain Current	I _{DSS}	V _{DS} =1200V, V _{GS} =0V	-	1	100	μA
Gates-Source Leakage Current	I _{GSS+}	V _{GS} =25V, V _{DS} =0V	-	10	250	nA
Gates-Source Leakage Current	I _{GSS-}	V _{GS} =-10V, V _{DS} =0V	-	10	250	nA
Drain-source On-state Resistance Note Fig.4,5,6	R _{DS(ON)}	V _{GS} =20V, I _D =50A	-	25	34	mΩ
		V _{GS} =20V, I _D =50A T _J =150°C	-	43	-	
Input Capacitance Note Fig.15,16	C _{ISS}	V _{DS} =1000V, V _{GS} =0V f = 1MHz V _{AC} =25mV	-	4200	-	pF
Output Capacitance Note Fig.15,16	C _{OSS}		-	250	-	pF
Reverse Transfer Capacitance Note Fig.15,16	C _{RSS}		-	16	-	pF
C _{oss} Stored Energy	E _{OSS}		-	126	-	μJ
Turn - On Switching Energy	E _{on}	V _{DS} = 800 V, V _{GS} = -5V/20V, I _D = 50A, R _{G(ext)} = 2.5Ω, L = 412μH	-	1.8	-	mJ
Turn - Off Switching Energy	E _{off}		-	0.6	-	mJ
Turn - On Delay Time	t _{d(on)}	V _{DS} = 800 V, V _{GS} = -5V/20V, I _D = 50A, R _{G(ext)} = 2.5Ω, R _L = 16Ω	-	15	-	ns
Rise Time	t _r		-	12	-	ns
Turn - Off Delay Time	t _{d(off)}		-	34	-	ns
Fall Time	t _f		-	7	-	ns

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

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Total Gate Charge	Q _g	V _{DS} =800V, V _{GS} =-5/20V I _D =50A	-	195	-	nC
Gate-Source Charge	Q _{gs}		-	54	-	
Gate-Drain Charge	Q _{gd}		-	29	-	
Internal Gate Resistance	R _{g(int)}	f = 1MH, V _{AC} =25mV	-	2.1	-	Ω

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

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Diode Forward Voltage Note Fig.8,9,10	V _{SD}	V _{GS} =-5V, I _{SD} =25A	-	3.5	-	V
		V _{GS} = -5V, I _{SD} = 25A, T _J = 150°C	-	3.3	-	
Continuous Diode Forward Current	I _S	T _c =25°C	-	-	98	A
Reverse Recovery Time	T _{rr}	I _{SD} = 50A, V _R = 800V	-	50	-	nS
Reverse Recovery Charge	Q _{rr}		-	216	-	nC
Peak Reverse Recovery Current	I _{rrm}		-	7.2	-	A

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX	
Thermal Resistance	R _{th(j-c)}	Junction-case	-	0.25	-	°C/W
Thermal Resistance	R _{th(j-a)}	Junction-Ambient	-	-	40	°C/W

TYPICAL PERFORMANCE (For Reference Only)

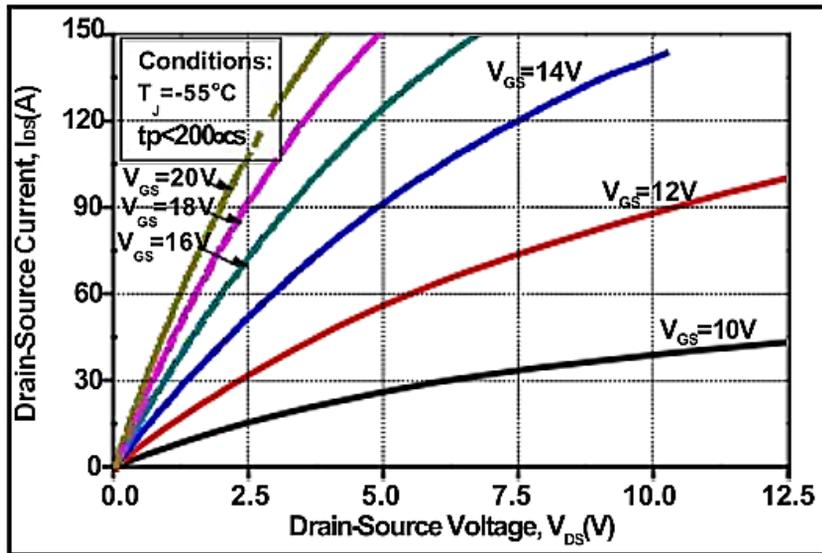


Figure 1. Output Characteristics $T_J = -55^\circ\text{C}$

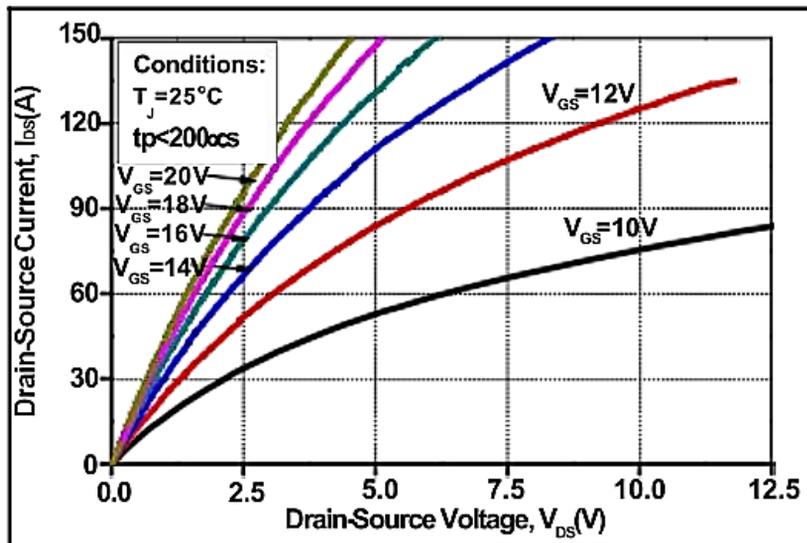


Figure 2. Output Characteristics $T_J = 25^\circ\text{C}$

TYPICAL PERFORMANCE (For Reference Only)

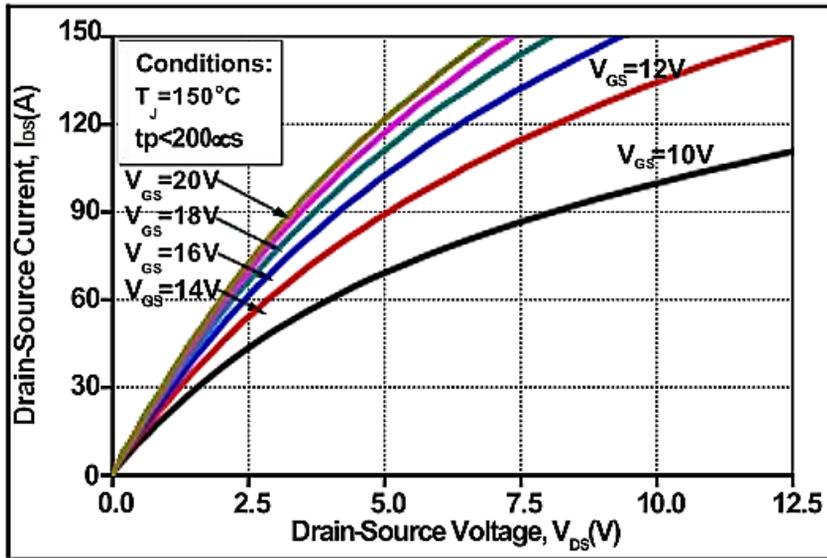


Figure 3. Output Characteristics $T_J = 150^\circ\text{C}$

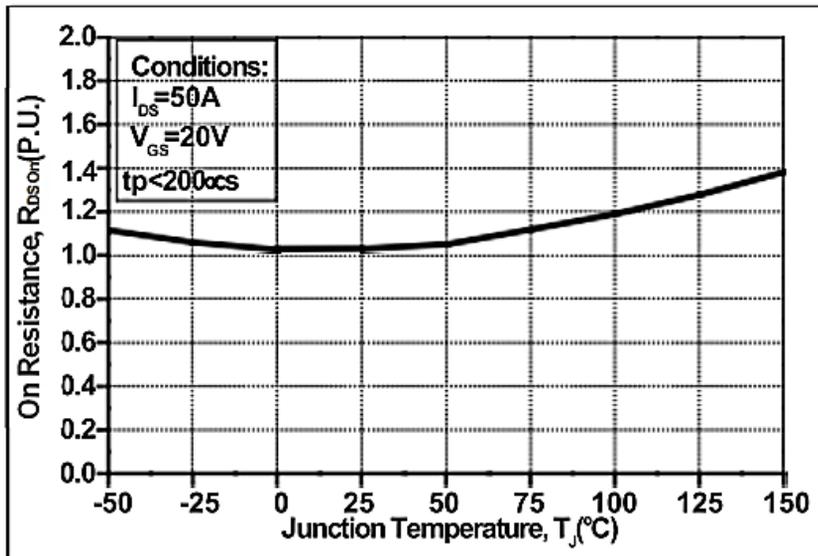


Figure 4. Normalized On-Resistance vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

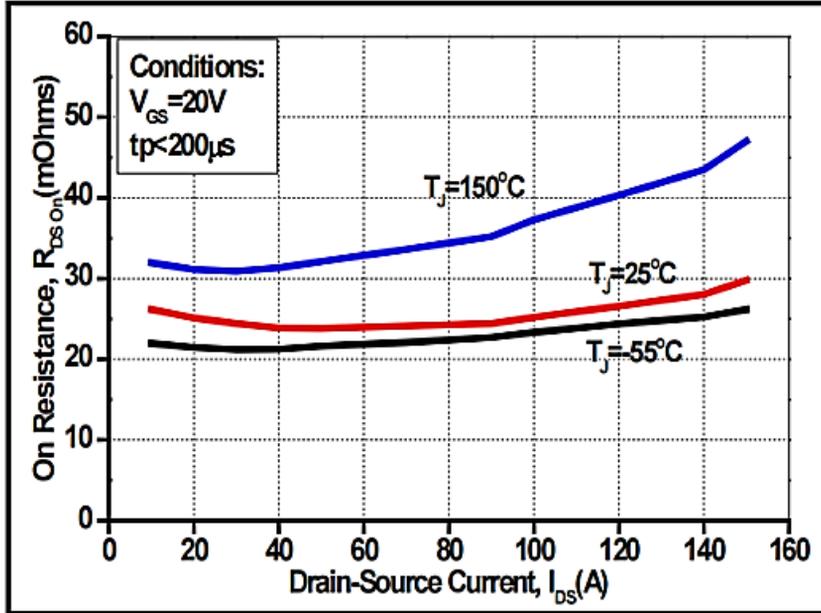


Figure 5. On-Resistance vs. Drain Current
For Various Temperatures

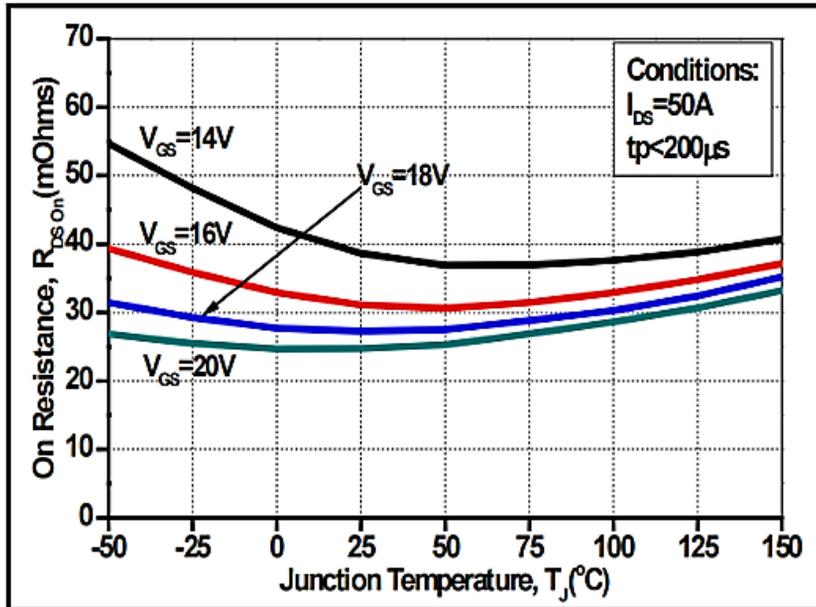


Figure 6. On-Resistance vs. Temperature
For Various Gate Voltage

TYPICAL PERFORMANCE (For Reference Only)

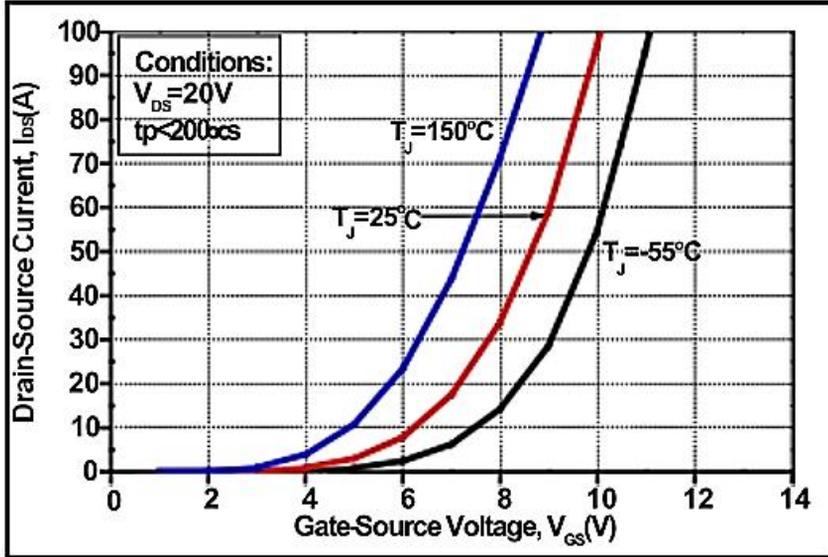


Figure 7. Transfer Characteristic for Various Junction Temperatures

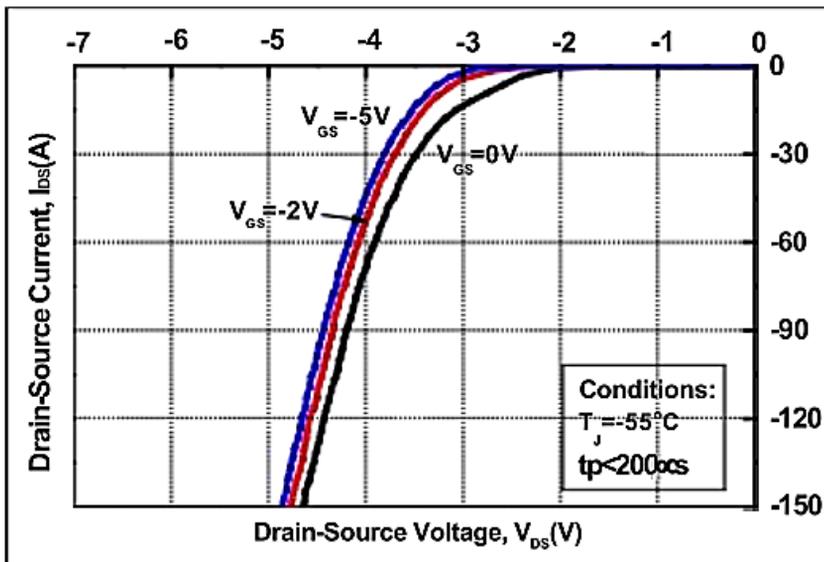


Figure 8. Body Diode Characteristic at -55°C

TYPICAL PERFORMANCE (For Reference Only)

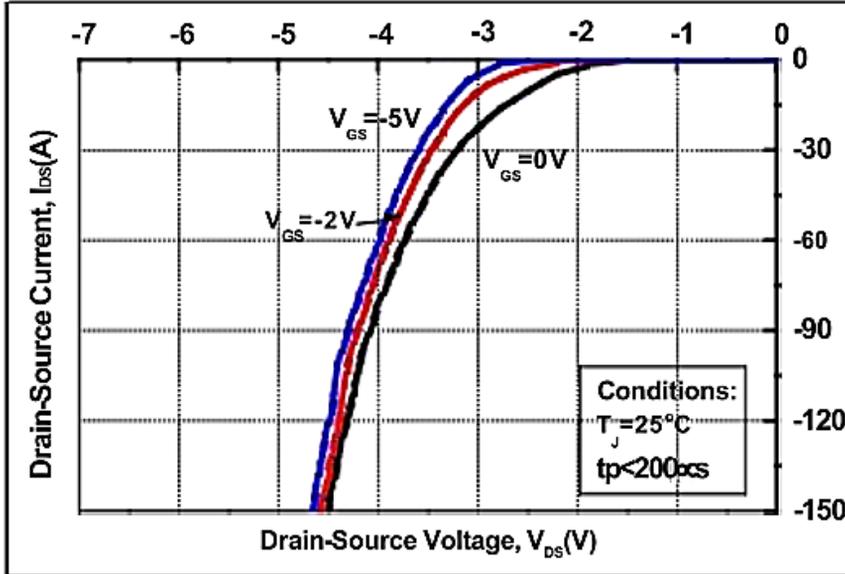


Figure 9. Body Diode Characteristic at 25°C

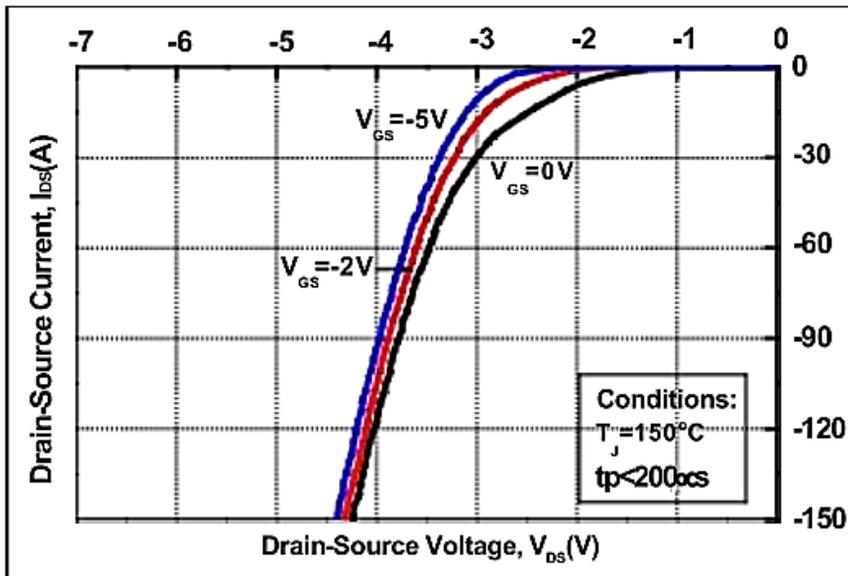


Figure 10. Body Diode Characteristic at 150°C

TYPICAL PERFORMANCE (For Reference Only)

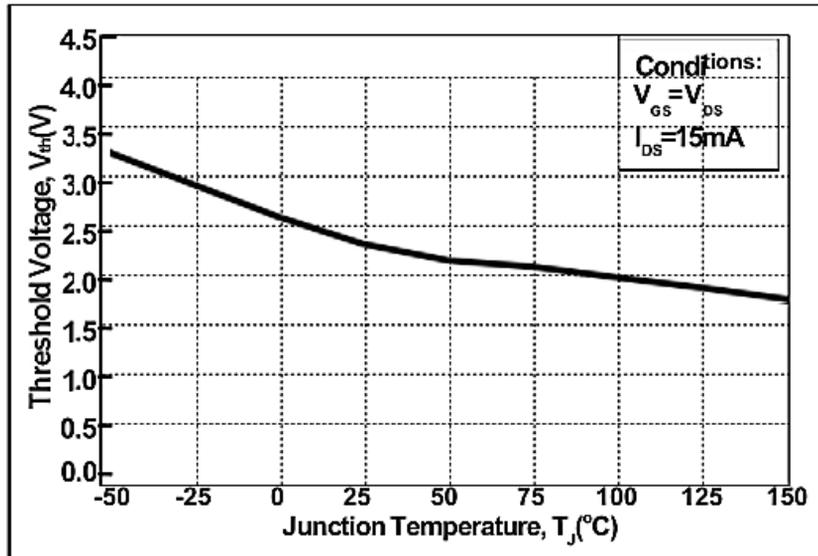


Figure 11. Threshold Voltage vs. Temperature

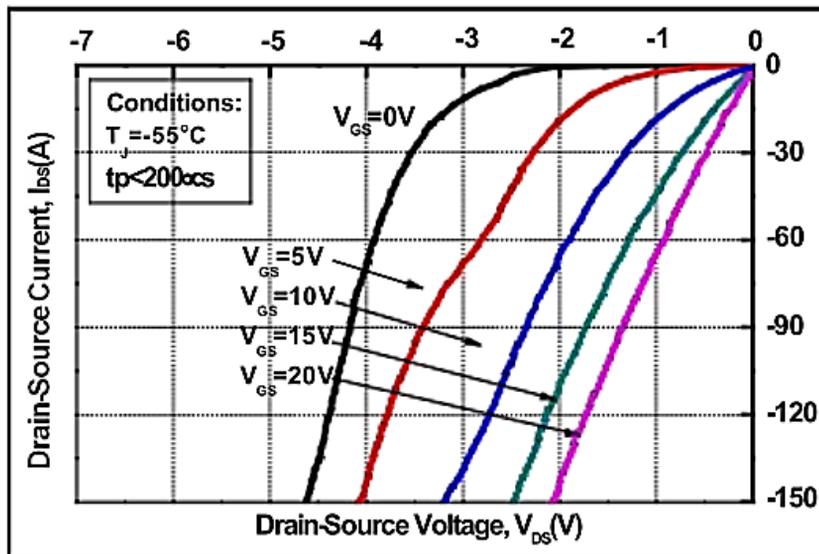


Figure 12. 3rd Quadrant Characteristic at -55°C

TYPICAL PERFORMANCE (For Reference Only)

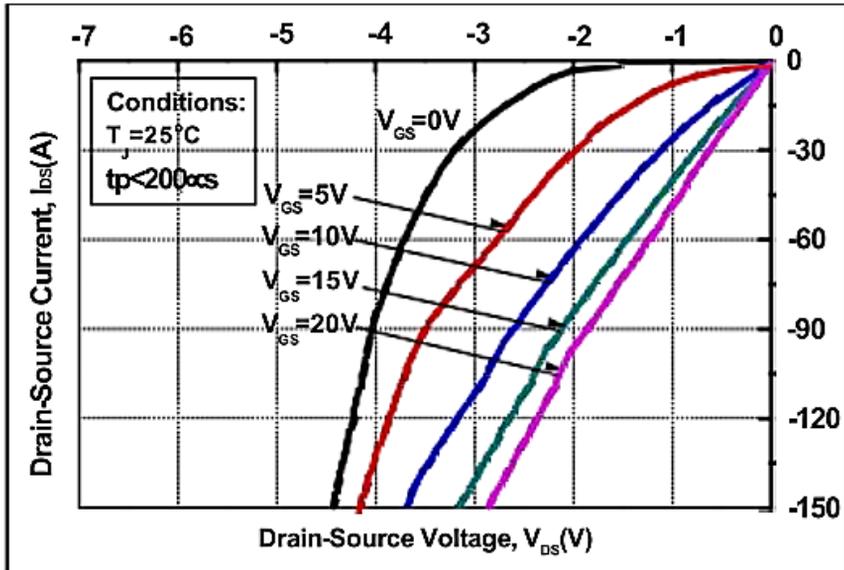


Figure 13. 3rd Quadrant Characteristic at 25°C

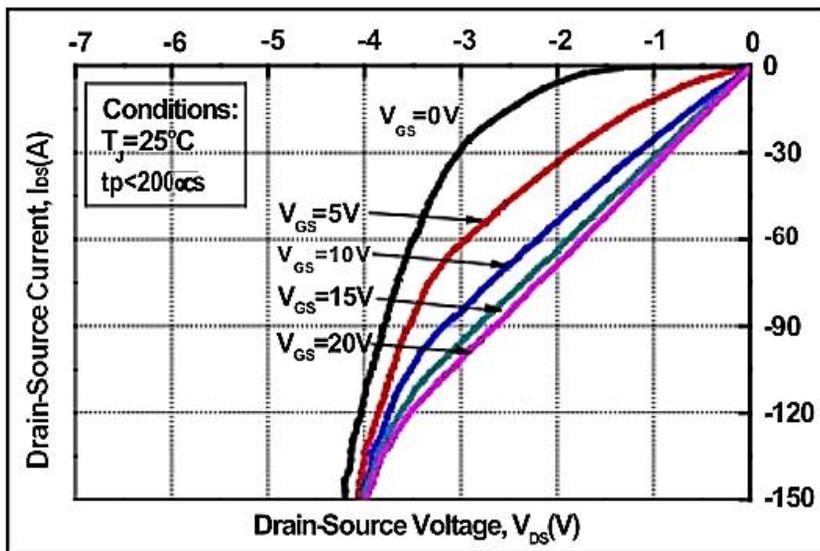


Figure 14. 3rd Quadrant Characteristic at 150°C

TYPICAL PERFORMANCE (For Reference Only)

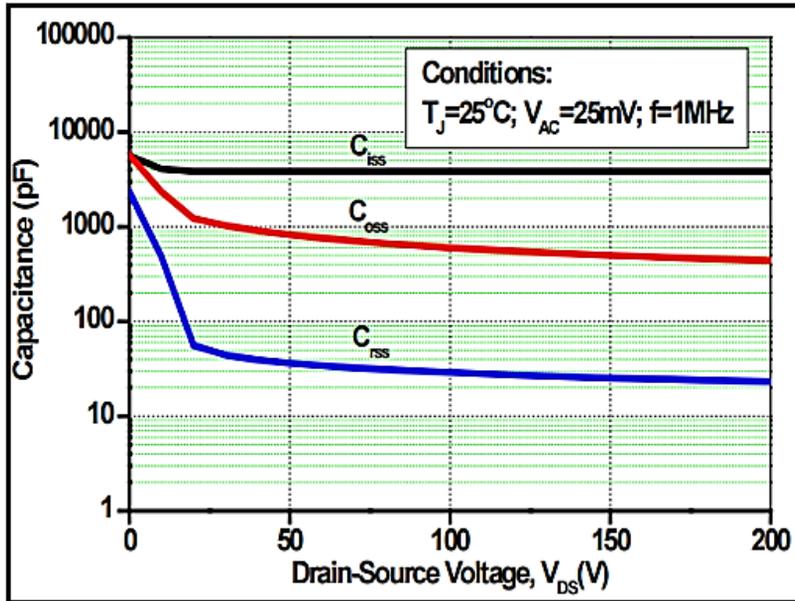


Figure 15. Capacitances vs. Drain-Source Voltage (0 - 200V)

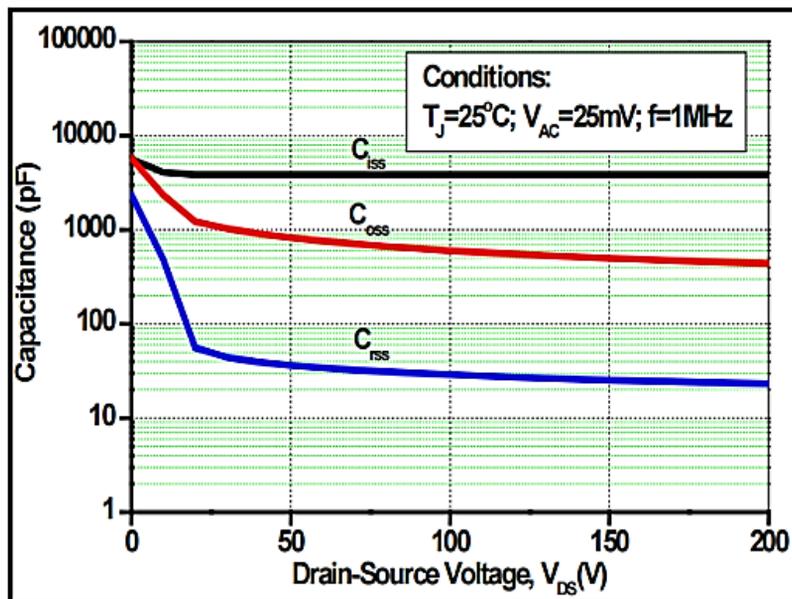


Figure 16. Capacitances vs. Drain-Source Voltage (0 - 1000V)

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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.
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