

SPECIFICATION SHEET NO.	S1107 – LGE3M35120BL0T	
ORIGINAL MFG/PART NO.	 LGE Diodes/LGE3M35120B-L	
NEXTGEN PART CODE	LGE3M35120BL0T	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</p> <p>Drain-Source On-State Resistance R_{DS(ON)}: 33mΩ</p> <p>Continuous Drain Current (I_D) @ T_c=25°C: 69A</p> <p>Operating Temperature: -40°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. 07, 2025		

CUSTOMER APPROVE	
Date:	

MAIN FEATURE

- High Blocking Voltage with Low On-Resistance
- High Frequency Operation
- Fast Intrinsic Diode With Low Reverse Recovery
- 100% avalanche tested
- 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 LGE3M35120BL0T For RFQ and Order.

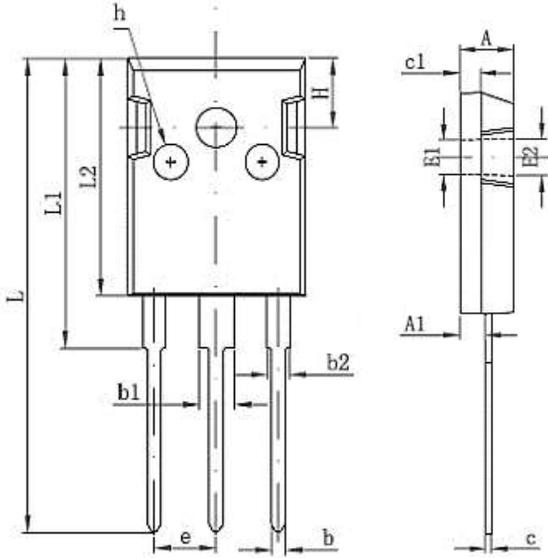
PART CODE GUIDE

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
35	Drain-Source On-State (V _{DS}) Resistance R _{DS(ON)} Code	35: 33mΩ
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

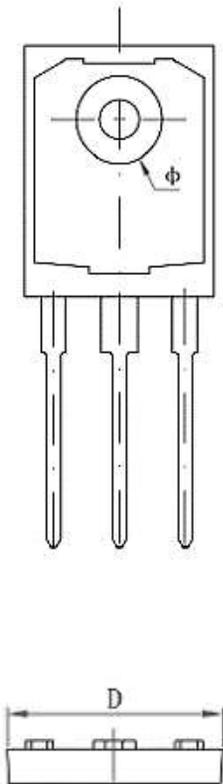
DIMENSION -- Unit: (mm), Case TO-247-3 Outline

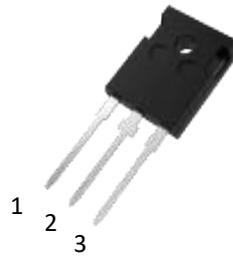
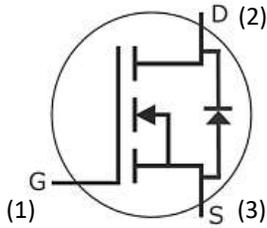
Top View



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

V _{DS}	I _D @ T _c =25°C	R _{DS(on)}	MARKING	PACKAGE/CASE
1200V	69A	33mΩ	LGE3M35120B	TO-247-3

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

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Drain-Source Voltage	V _{DSMax}		1200	V
Gate-Source Voltage(dynamic)	V _{GSMAX}	T _{surge} <100ns	-10/+25	V
Gate-Source Voltage(static)	V _{Gsop}		-5/+20	V
Continuous Drain Current	I _D	V _{GS} =20V, T _c =25°C	69	A
		V _{GS} =20V, T _c =100°C	49	
Pulsed Drain Current	I _D (pulse)	T _c =25°C	114	A
Avalanche Energy	E _{AS}	V _{DD} =100V, V _{GS} =20V, L=2mH	576	mJ
Avalanche Peak Current	I _{AV}		24	A
Total Power Dissipation	P _D	T _c =25°C	330	W
Operating Junction Temperature Range	T _J		-40 ~ +175	°C
Storage Temperature Range	T _{STG}		-40 ~ +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	1200	-	-	V
Gates Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =10mA, T _J =25°C	1.8	2.6	3.5	V
		V _{DS} =V _{GS} , I _D =10mA, T _J =150°C	-	1.9	-	
		V _{DS} =V _{GS} , I _D =10mA, T _J =175°C	-	1.8	-	
Zero Gates Voltage Drain Current	I _{DSS}	V _{DS} =1200V, V _{GS} =0V	0	1	50	μA
Gates-Source Leakage Current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	0	1	200	nA
		V _{GS} =-5V, V _{DS} =0V	-200	-1	0	
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =20V, I _D =40A	-	33	44	mΩ
		V _{GS} =20V, I _D =40A, T _J =150°C	-	51	-	
		V _{GS} =20V, I _D =40A, T _J =175°C	-	58	-	
Transconductance	g _{fs}	V _{DS} =20V, I _D =40A	-	26	-	S
		V _{DS} =20V, I _D =40A, T _J =150°C	-	23	-	
		V _{DS} =20V, I _D =40A, T _J =175°C	-	22	-	
Input Capacitance	C _{iss}	V _{DS} =1000V, V _{GS} =0V, f=1MHz	-	2660	-	pF
Output Capacitance	C _{oss}		-	128	-	pF
Reverse Transfer Capacitance	C _{rss}		-	9	-	pF
Coss Stored Energy	E _{oss}		-	84	-	μJ
Turn-On Switching Energy	E _{on}	V _{DS} =800V, V _{GS} =-5V/20V, I _D =40A, R _{G(ext)} =2Ω, L=100μH	-	1050	-	μJ
Turn-Off Switching Energy	E _{off}		-	33	-	μJ
Turn-On Delay Time	t _{d(on)}		-	35	-	ns
Rise Time	t _r		-	18	-	ns
Turn-Off Delay Time	t _{d(off)}		-	41	-	ns
Fall Time	t _f		-	10	-	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	-	2.5	-	Ω
Gate to Source Charge	Q _{GS}	V _{DS} =800V, V _{GS} =-5V/20V I _D =40A	-	36	-	nC
Gate to Drain Charge	Q _{GD}		-	53	-	nC
Total Gate Charge	Q _G		-	135	-	nC

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} =20A	-	4.6	-	V
		V _{GS} =-5V, I _{SD} =20A, Tc=150°C	-	4.1	-	
		V _{GS} =-5V, I _{SD} =20A, Tc=175°C	-	4.0	-	
Continuous Diode Forward Current	I _S	V _{GS} =-5V	-	-	55	A
Reverse Recovery Time	t _{rr}	V _{GS} = -5V, I _{SD} =40A V _R =800V, dif/dt = 1700 A/μs	-	45	-	ns
Reverse Recovery Charge	Q _{rr}		-	370	-	nC
Peak Reverse Recovery Current	I _{rrm}		-	16	-	A

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX.	
Thermal Resistance	R _{th(j-c)}	junction-case	-	0.35	0.45	°C/W
Thermal Resistance	R _{th(j-a)}	junction-ambient	-	30	40	°C/W

TYPICAL PERFORMANCE (For Reference Only)

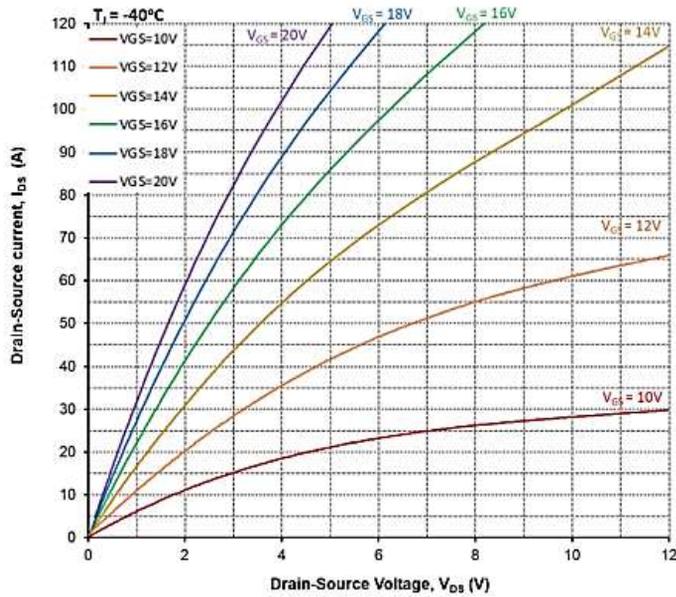


Figure 1. Output Characteristics, $T_J = -40^\circ\text{C}$

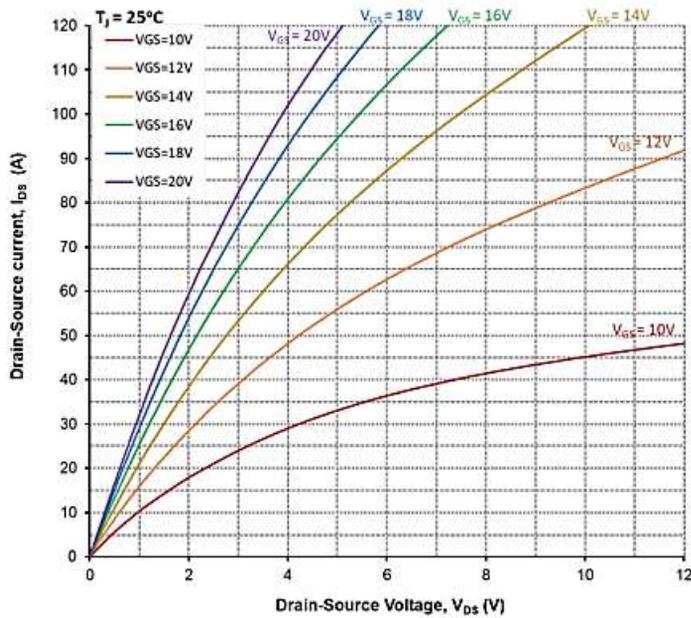


Figure 2. Output Characteristics, $T_J = 25^\circ\text{C}$

TYPICAL PERFORMANCE (For Reference Only)

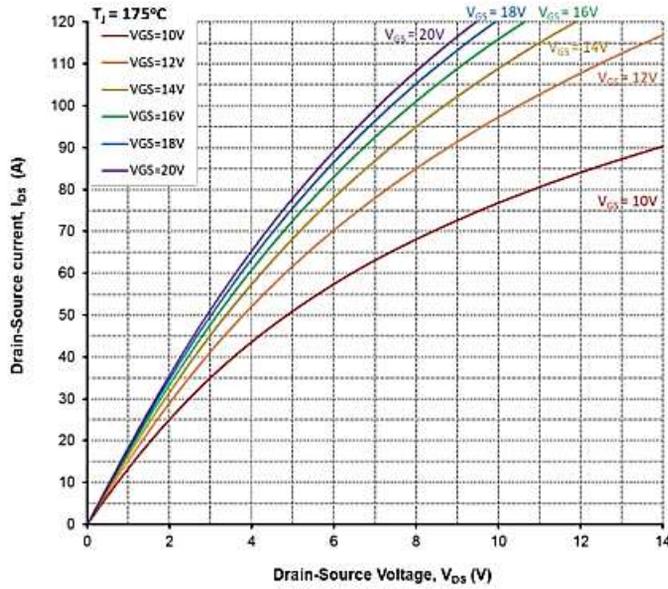


Figure 3. Output Characteristics, $T_J = 175^\circ\text{C}$

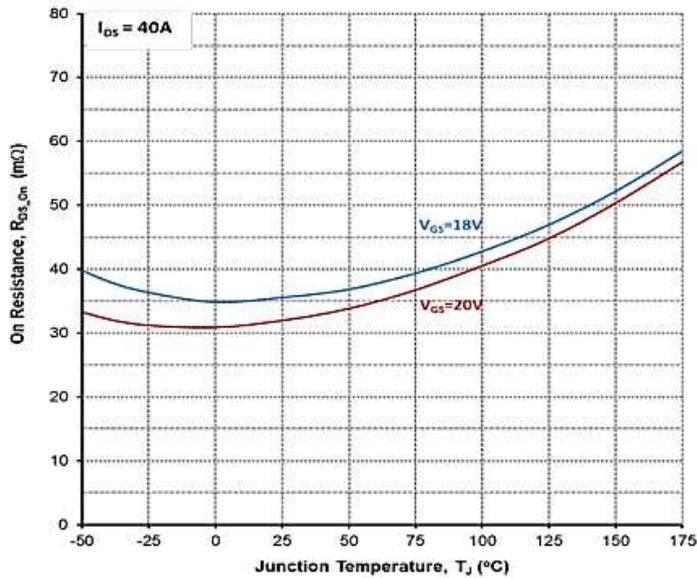


Figure 4. On-Resistance vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

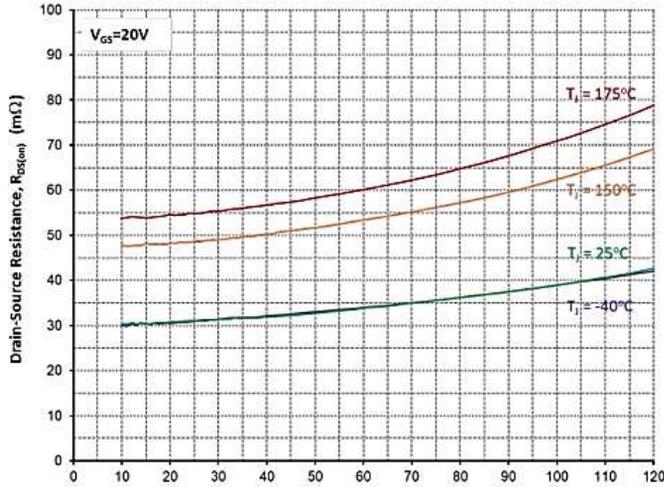


Figure 5. On-Resistance vs. Drain Current For Various Temperatures

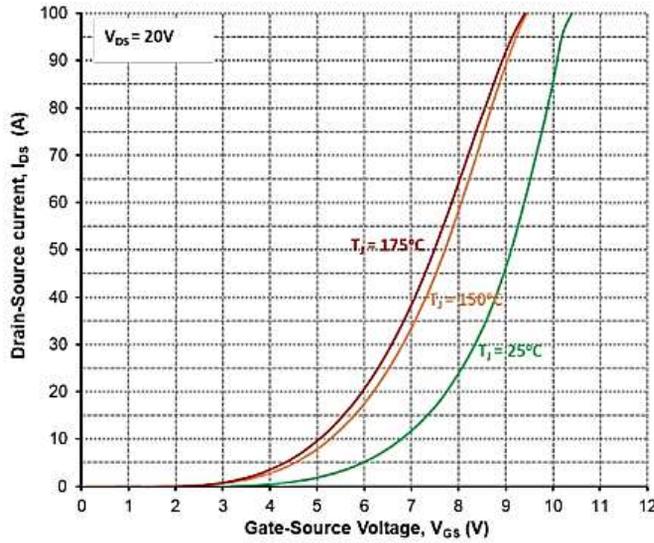


Figure 6. Transfer Characteristic For Various Junction Temperatures

TYPICAL PERFORMANCE (For Reference Only)

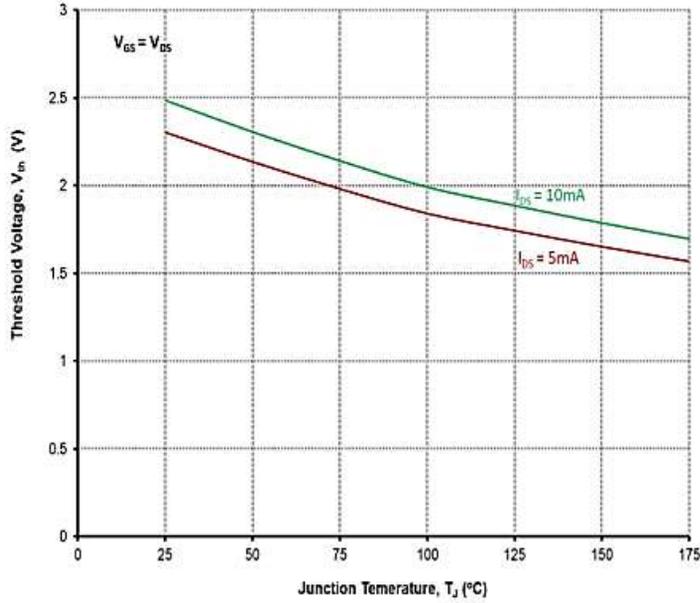


Figure 7. Threshold Voltage vs. Temperature

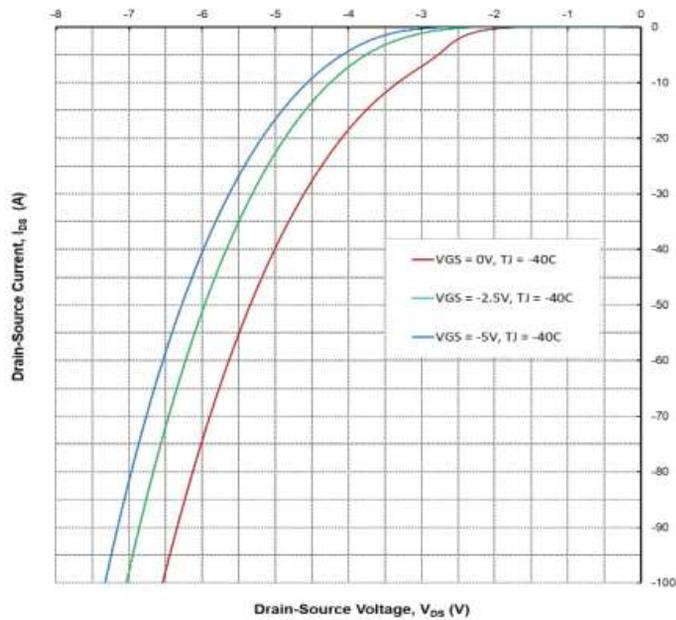


Figure 8. Body Diode Characteristics @ -40°C

TYPICAL PERFORMANCE (For Reference Only)

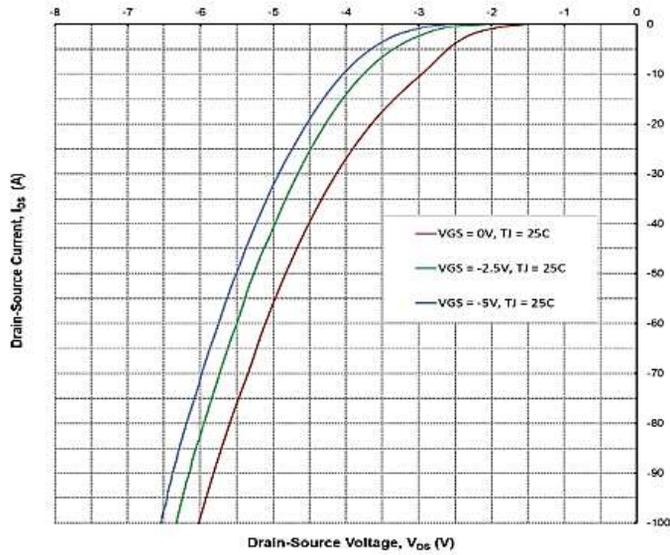


Figure 9. Body Diode Characteristics @ 25°C

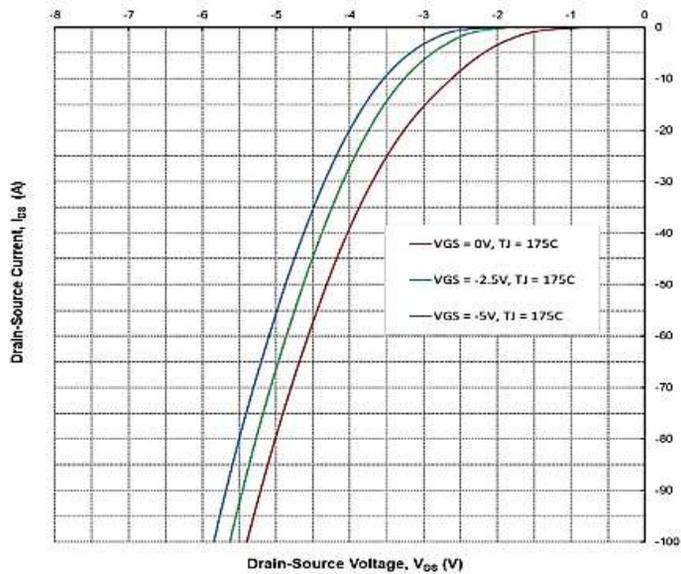


Figure 10. Body Diode Characteristics @ 175°C

TYPICAL PERFORMANCE (For Reference Only)

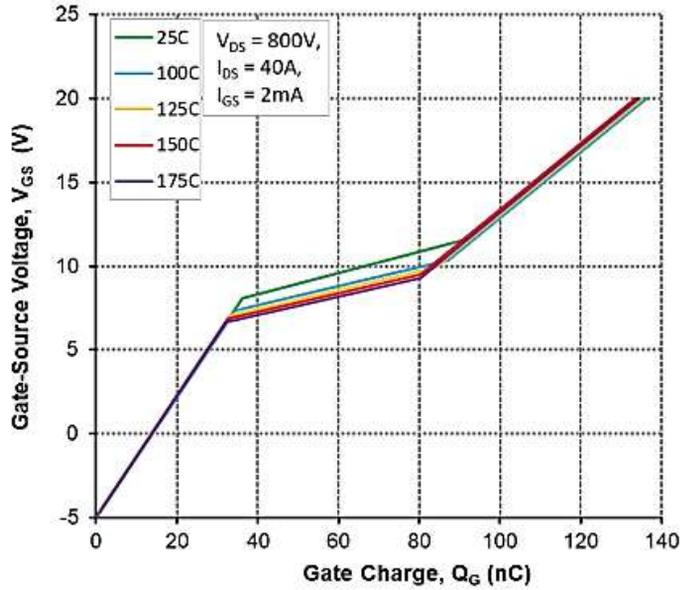


Figure 11. Gate Charge Characteristics

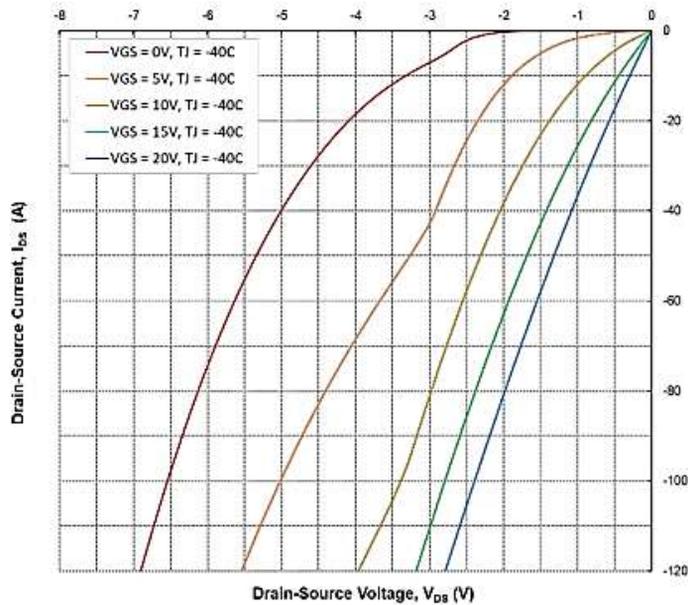


Figure 12. 3rd Quadrant Characteristics @ -40°C

TYPICAL PERFORMANCE (For Reference Only)

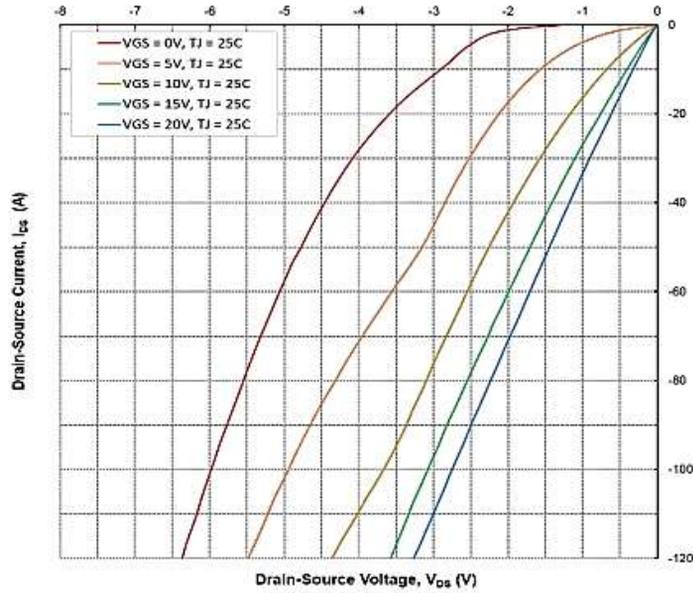


Figure 13. 3rd Quadrant Characteristics @ 25°C

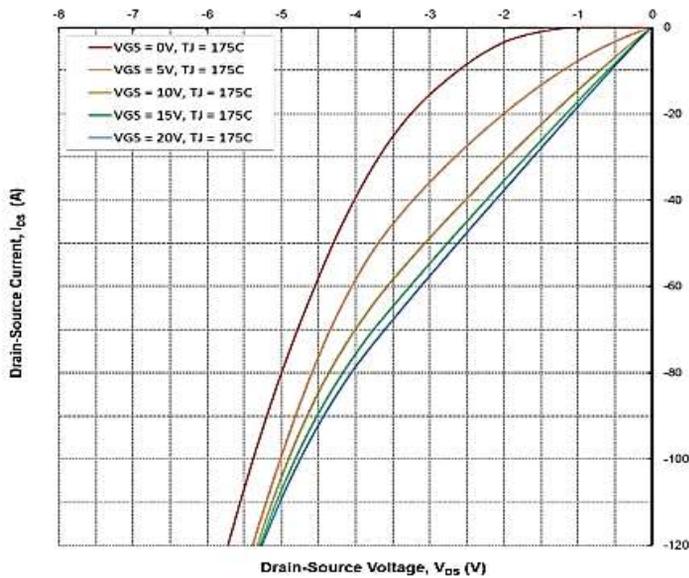


Figure 14. 3rd Quadrant Characteristics @ 175°C

TYPICAL PERFORMANCE (For Reference Only)

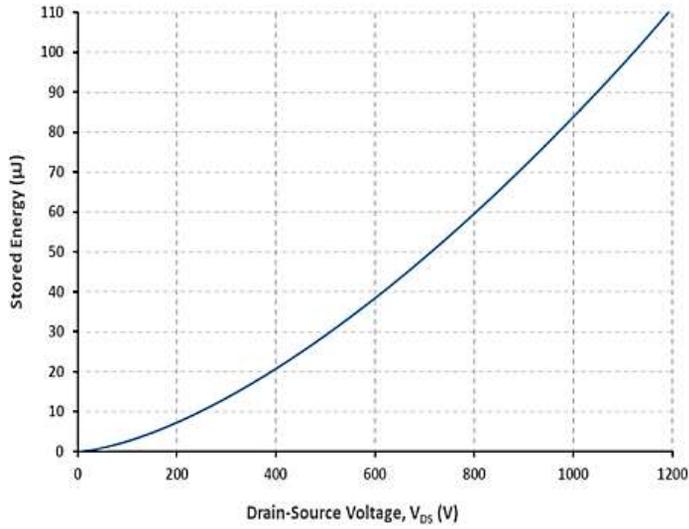


Figure 15. Output Capacitor Stored Energy

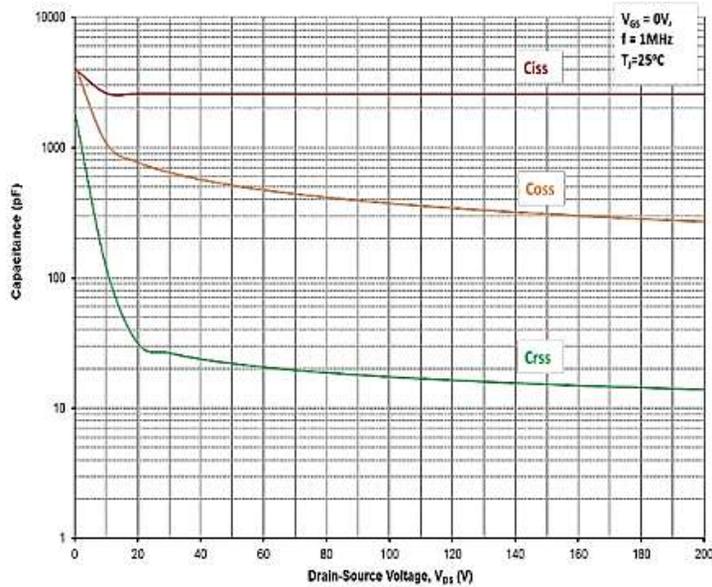


Figure 16. Capacitances vs. Drain-Source Voltage (0-200V)

TYPICAL PERFORMANCE (For Reference Only)

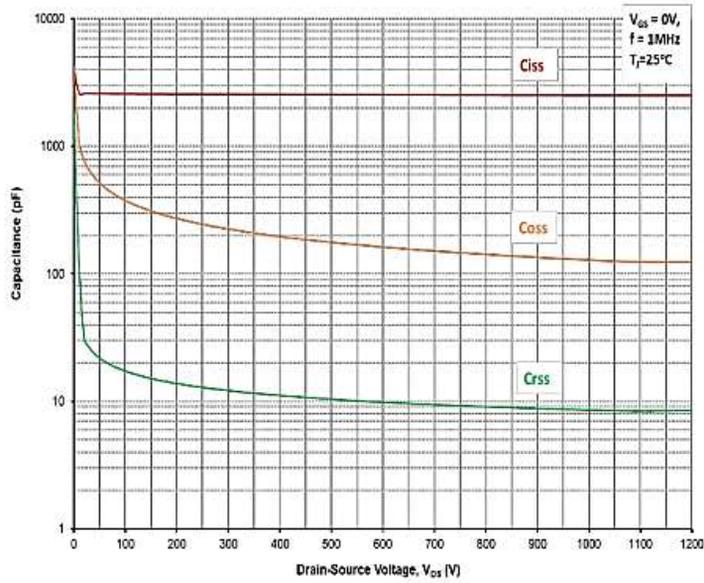


Figure 17. Capacitances vs. Drain-Source Voltage (0-1200V)

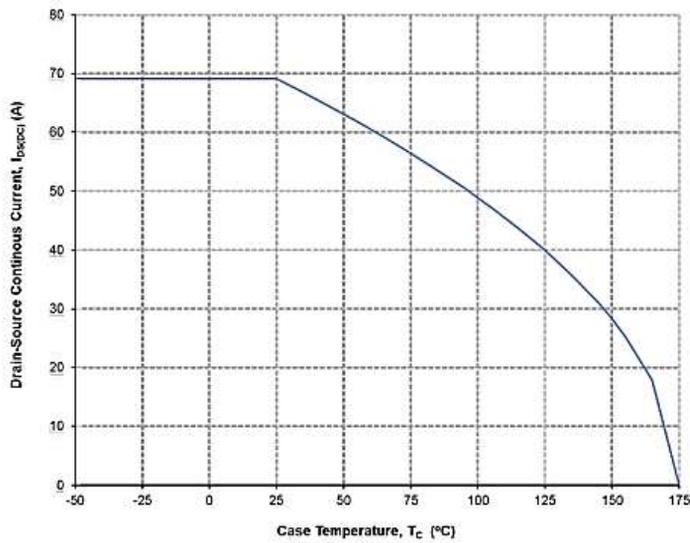


Figure 18. Continuous Drain Current Derating vs. Case Temperature

TYPICAL PERFORMANCE (For Reference Only)

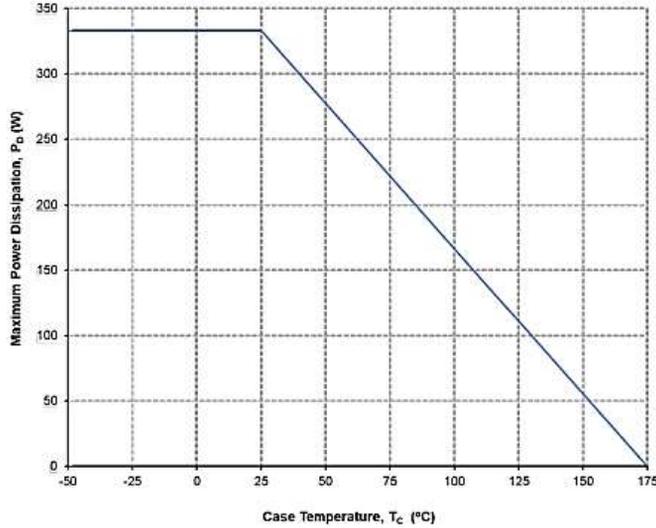


Figure 19. Maximum Power Dissipation Derating vs. Case Temperature

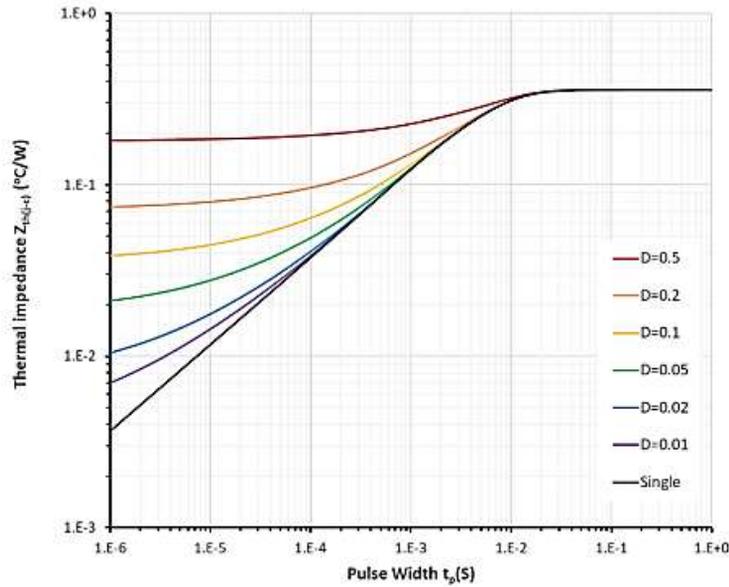


Figure 20. Transient Thermal Impedance (Junction to Case)

TYPICAL PERFORMANCE (For Reference Only)

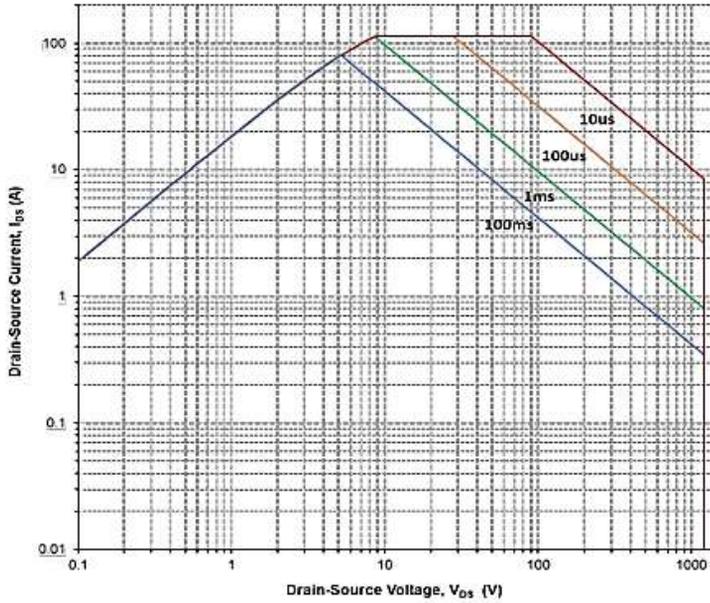


Figure 21. Safe Operating Area

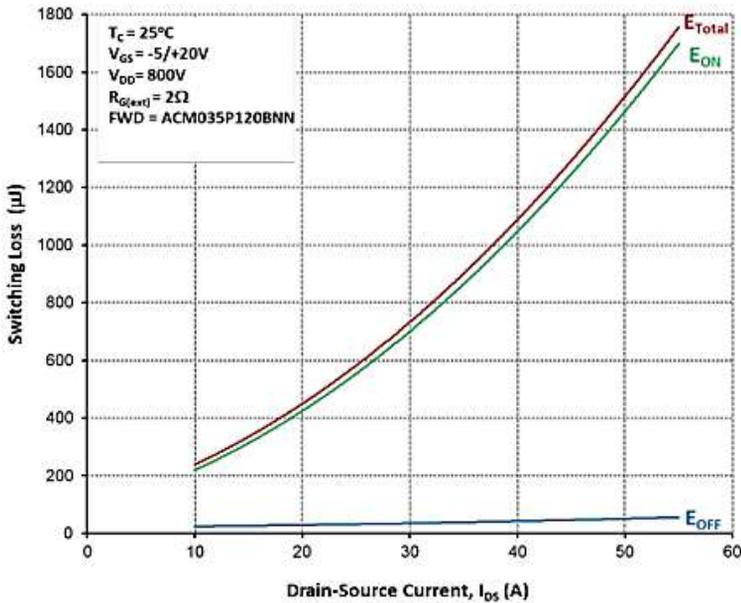


Figure 22. Switching energy vs Drain current

TYPICAL PERFORMANCE (For Reference Only)

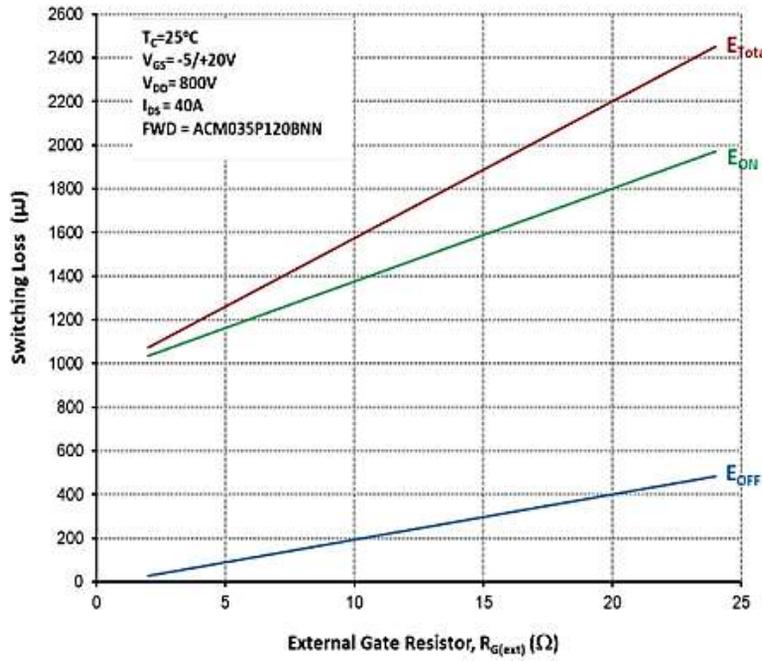


Figure 23. Switching energy vs External Gate Resistor

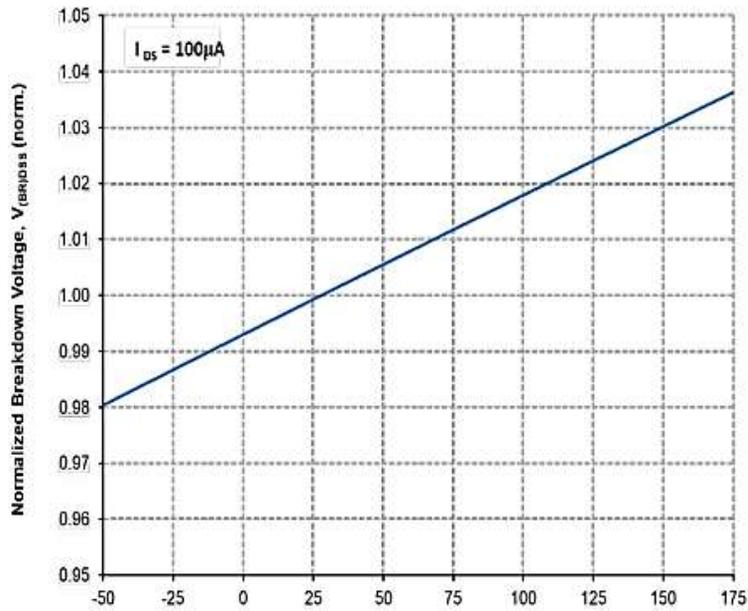
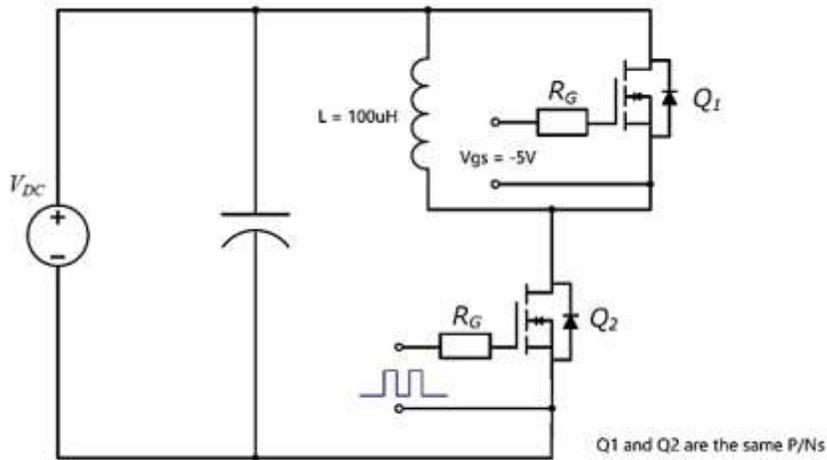
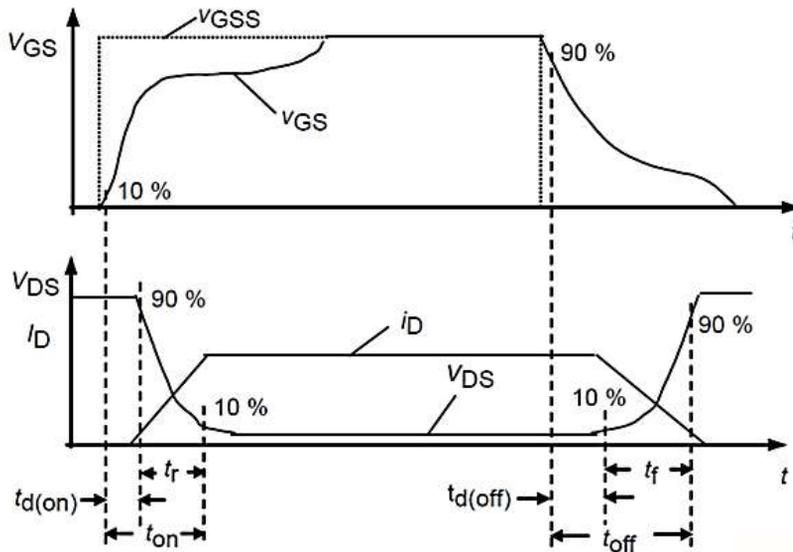


Figure 24. Normalized breakdown voltage vs Temperature

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.
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