120N10

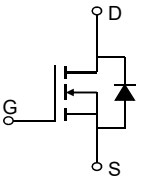
100V 3.0mΩ N-Ch Power MOSFET

Applications

- Motor Driving in Power Tool, E-vehicle, Robotics
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Power Management in Telecom., Industrial Automation, CE

Features

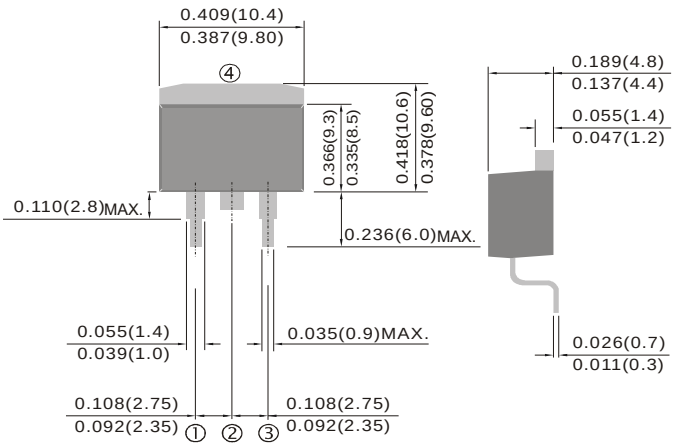
- Ultra-low $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant



Product Summary

Parameter	Value	Unit
V_{DS}	100	V
$V_{GS(th)}$	3.0	V
I_D (@ V_{GS} = 10V) (1)	120	A
$R_{DS(ON)}$ (@ V_{GS} = 10V)	3.0	mΩ

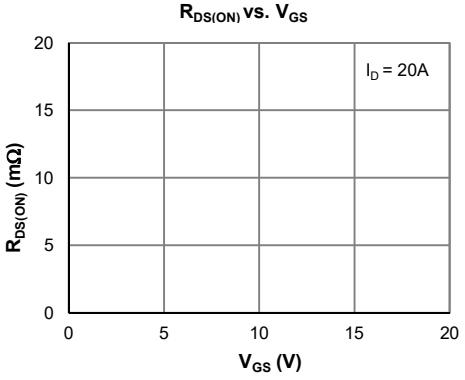
TO-263 / D²PAK

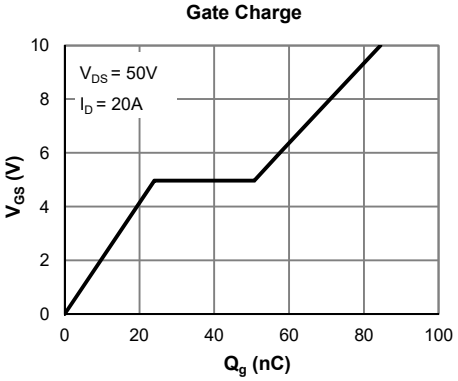


Dimensions in inches and (millimeters)

Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-to-Source Voltage		V_{DS}	100	V
Gate-to-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (1)	T_C = 25°C	I_D	200	A
	T_C = 100°C		120	
Pulsed Drain Current (2)		I_{DM}	689	A
Avalanche Energy (3)		E_{AS}	726	mJ
Power Dissipation (4)	T_C = 25°C	P_D	312	W
	T_C = 100°C		125	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C





120N10

Electrical Characteristics (@ T_J = 25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1.0	μA
		T_J = 55°C			5.0	
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	3.0	4.0	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 20A		3.0	4.0	mΩ
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D = 20A		50		S
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V		0.66	1.0	V
Diode Continuous Current	I_S	T_C = 25°C			215	A
DYNAMIC PARAMETERS (5)						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		4797		pF
Output Capacitance	C_{oss}			900		pF
Reverse Transfer Capacitance	C_{rss}			19.1		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS}= 0V, f = 1MHz		1.9		Ω
SWITCHING PARAMETERS (5)						
Total Gate Charge (@ V_{GS} = 10V)	Q_g	V_{GS} = 0 to 10V V_{DS} = 50V, I_D = 20A		84		nC
Total Gate Charge (@ V_{GS} = 6.0V)	Q_g			57		nC
Gate Source Charge	Q_{gs}			24		nC
Gate Drain Charge	Q_{gd}			27		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS} = 10V, V_{DS} = 50V R_L = 2.5Ω, R_{GEN} = 3Ω		21		ns
Turn-On Rise Time	t_r			35		ns
Turn-Off DelayTime	$t_{D(off)}$			49		ns
Turn-Off Fall Time	t_f			30		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F = 20A, dI_F/dt = 100A/μS		71		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F = 20A, dI_F/dt = 100A/μS		127		nC

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	45	55	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.40	0.60	°C/W

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under T_{J_Max} = 150°C.
3. E_{AS} of 726 mJ is based on starting T_J = 25°C, L = 3mH, I_{AS} = 22A, V_{GS} = 10V, V_{DD} = 50V; 100% test at L = 0.3mH, I_{AS} = 45A. T_{J_Max} = 150°C.
4. The power dissipation P_D is based on T_{J_Max} = 150°C.
5. This value is guaranteed by design hence it is not included in the production test.

RATING AND CHARACTERISTIC CURVES (120N10)

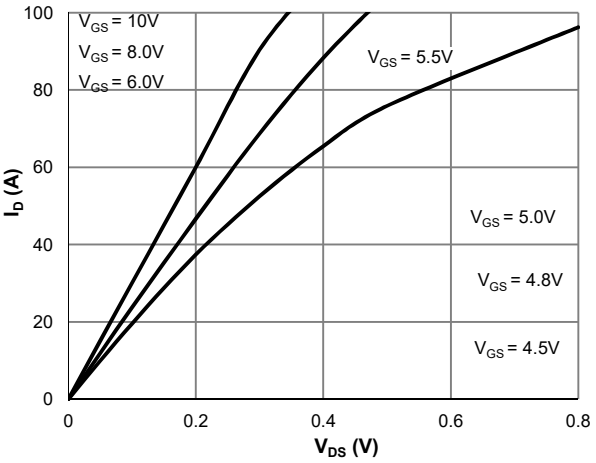


Figure 1: Saturation Characteristics

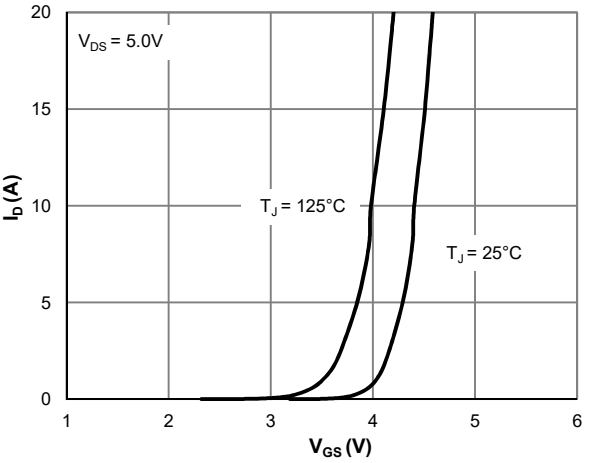


Figure 2: Transfer Characteristics

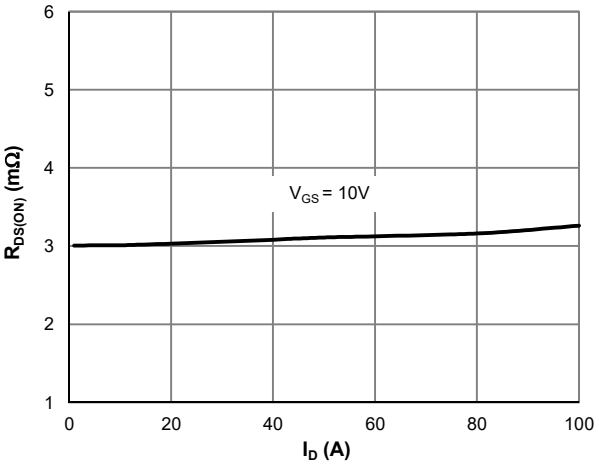


Figure 3: $R_{DS(ON)}$ vs. Drain Current

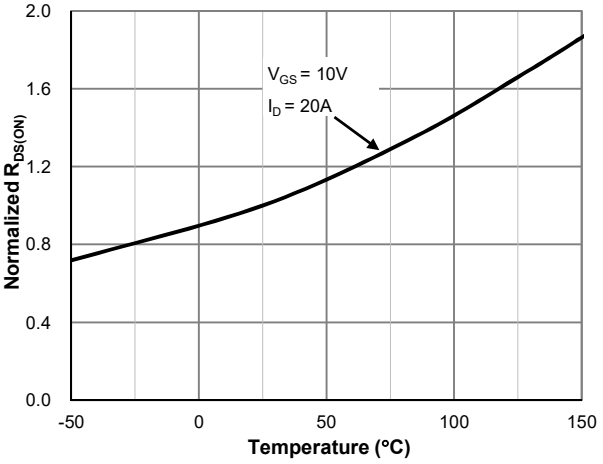


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

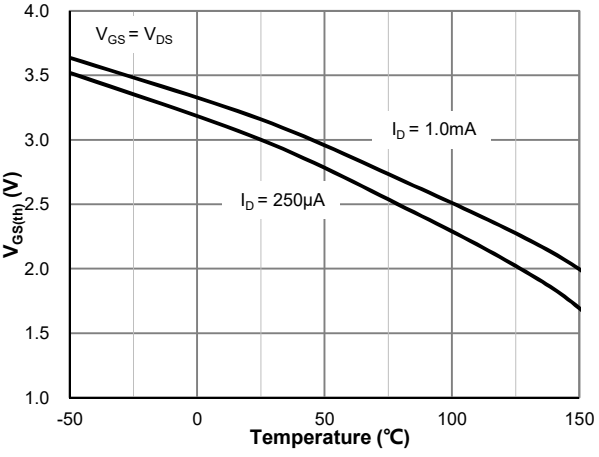


Figure 5: VGS(th) vs. Junction Temperature

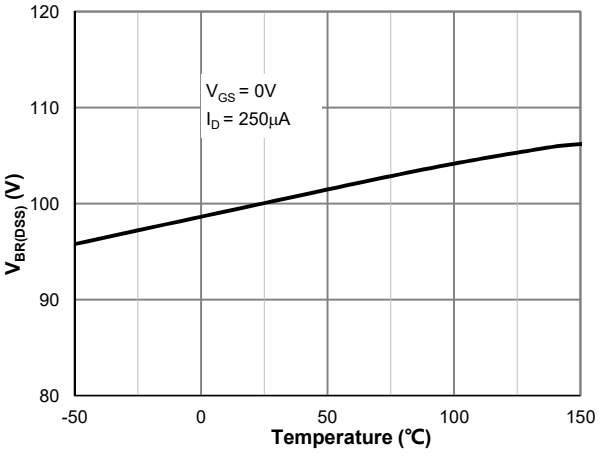


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

RATING AND CHARACTERISTIC CURVES (120N10)

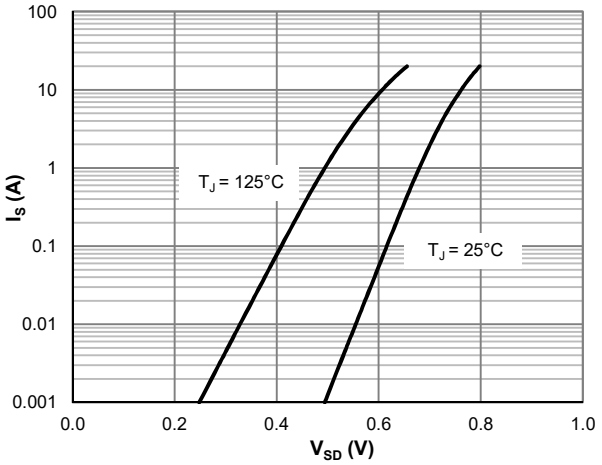


Figure 7: Body-Diode Characteristics

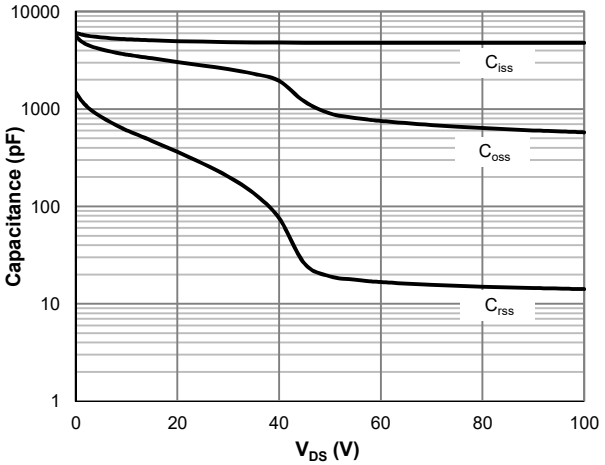


Figure 8: Capacitance Characteristics

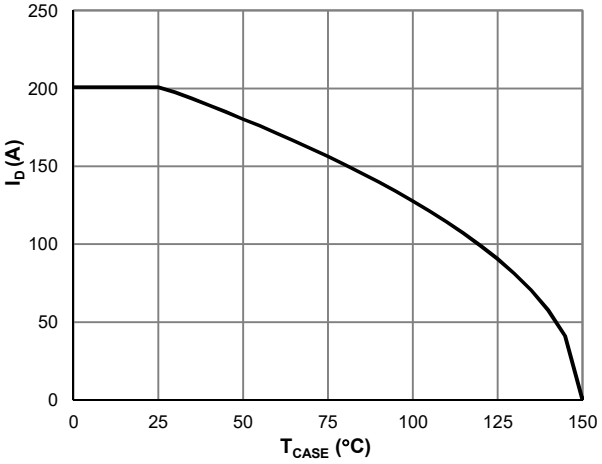


Figure 9: Current De-rating

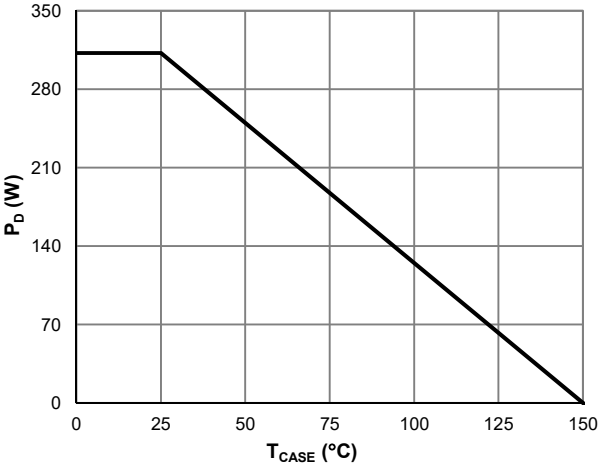


Figure 10: Power De-rating

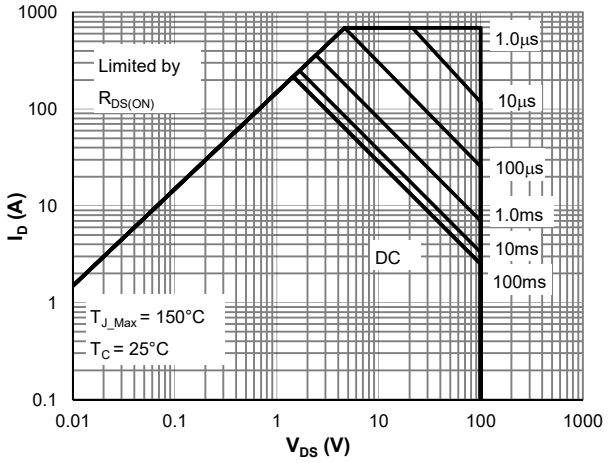


Figure 11: Maximum Safe Operating Area

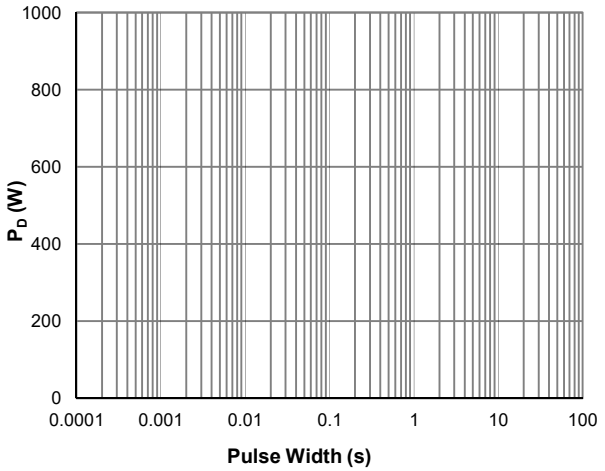


Figure 12: Single Pulse Power Rating, Junction-to-Case

RATING AND CHARACTERISTIC CURVES (120N10)

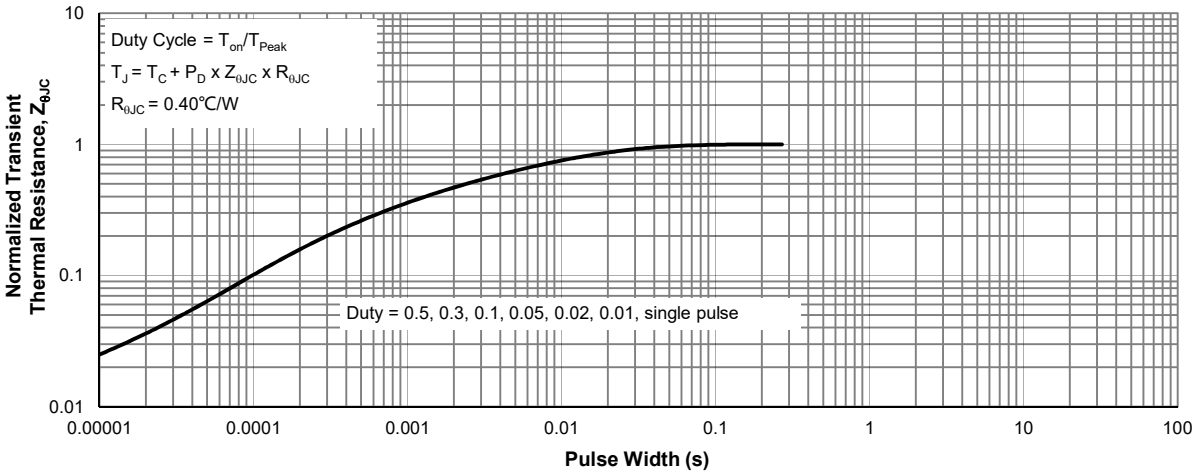


Figure 13: Normalized Maximum Transient Thermal Impedance

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by GOODWORK ***manufacturer:***

Other Similar products are found below :

IRFD120 JANTX2N5237 BUK455-60A/B MIC4420CM-TR VN1206L NDP4060 SI4482DY IPS70R2K0CEAKMA1 SQD23N06-31L-GE3 TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 DMN1053UCP4-7 SQJ469EP-T1-GE3 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 DMN2990UFB-7B IPB80P04P405ATMA2 2N7002W-G MCAC30N06Y-TP MCQ7328-TP NTMC083NP10M5L NVMFS2D3P04M8LT1G BXP7N65D BXP4N65F AOL1454G WMJ80N60C4 BXP2N20L BXP2N65D BXT1150N10J BXT1700P06M TSM60NB380CP ROG RQ7L055BGTCR DMNH15H110SK3-13 SLF10N65ABV2 BSO203SP BSO211P