200N04

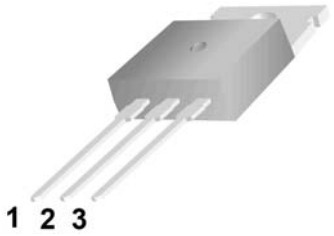
40V N-Channel MOSFET

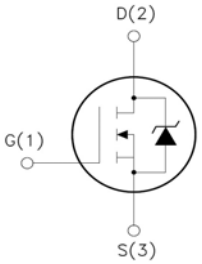
Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 130nC (Typ.).
- ☐ BVDSS=40V,I_D=200A
- ☐ R_{DS}(on) : 2.6mΩ(Max) @V_G=10V
- ☐ 100% Avalanche Tested

TO-220

RoHS COMPLIANT





1.Gate (G)
2.Drain (D)
3.Source (S)

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

Symbol	Parameter		Maximum	Unit
V_{DSS}	Drain-to-Source Voltage		40	V
V_{GSS}	Gate-to-Source Voltage		±20	V
I_D[3]	Continuous Drain Current	T_C=25°C	200	A
		T_C=100°C	116	
I_{DP}[4]	Pulsed Drain Current	T_C=25°C	720	
IAS[5]	Avalanche Current		28	
EAS[5]	Avalanche energy		870	mJ
PD	Maximum Power Dissipation	T_C=25°C	1.96	W
		T_C=100°C	245	
T_J, T_{STG}	Junction & Storage Temperature Range		-55~150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
Rθjc	Thermal Resistance-Junction to Case	0.51	℃/W
Rθja	Thermal Resistance-Junction to Ambient	62.5	

(TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	40	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V,V_{GS}=0V	—	—	1	uA
		T_J=100°C	—	—	100	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	—	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	—	—	±100	nA
$R_{DS(on)}$[1]	Drain-Source On-Resistance	V_{GS}=10V, I_D=70A	—	2.6	3.4	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}[1]	Diode Forward Voltage	I_{SD}70A,V_{GS}=0V	—	—	1.3	V
I_S[3]	Diode Continuous Forward Current		—	—	140	A
t_{rr}	Reverse Recovery Time	I_F=70A,VDD=50V	—	48	—	nS
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/us	—	69.6	—	nC
Dynamic Characteristics[2]						
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, Frequency=1MHz	—	9.0	—	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V Frequency=1MHz	—	4882	—	pF
C_{oss}	Output Capacitance		—	635	—	
C_{rss}	Reverse Transfer Capacitance		—	342	—	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=20V,I_D=100A, V_{GS}=10V,R_G=6Ω	—	37.9	—	nS
t_r	Rise Time		—	22.7	—	
$t_{d(off)}$	Turn-Off Delay Time		—	68.8	—	
t_f	Fall Time		—	23.5	—	
Gate Charge Characteristics[2]						
Q_g	Total Gate Charge	V_{DS}=48V,V_{GS}=10V I_D=100A	—	86.2	—	nC
Q_{gs}	Gate-to-Source Charge		—	23.6	—	
Q_{gd}	Gate-to-Drain Charge		—	29.4	—	

Note: 1: Pulse test; pulse width ≦ 300us, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.
3: Package limitation current is 8A.Calculated continuous current based on maximum allowable junction temperature.
4: Repetitive rating, pulse width limited by max junction temperature.
5: Starting TJ = 25°C,L = 0.5mH

Typical Characteristics

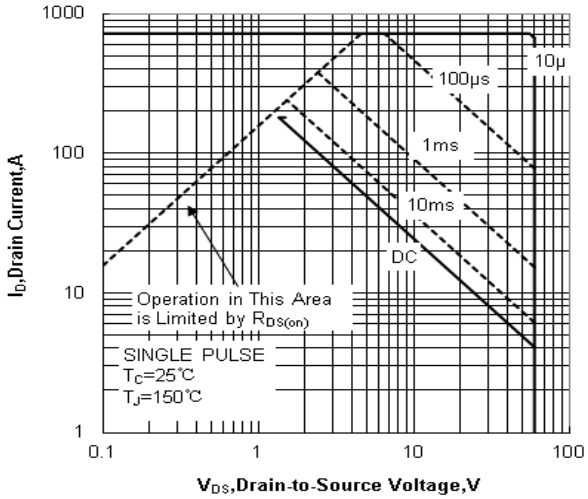


Figure 1 Maximum Forward Bias Safe Operating Area

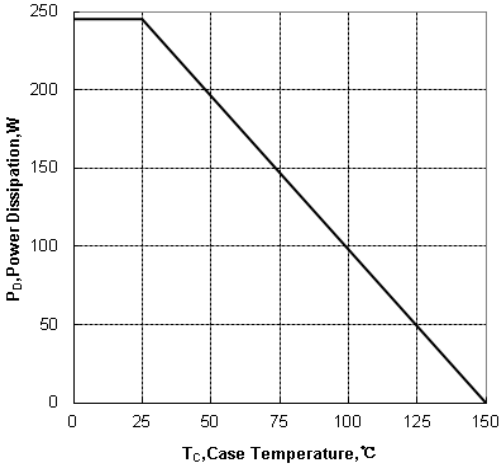


Figure 2 Maximum Power Dissipation vs Case Temperature

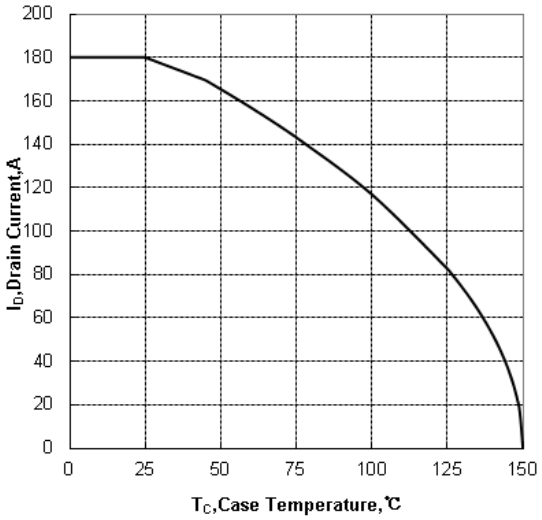


Figure 3 Maximum Continuous Drain Current vs Case Temperature

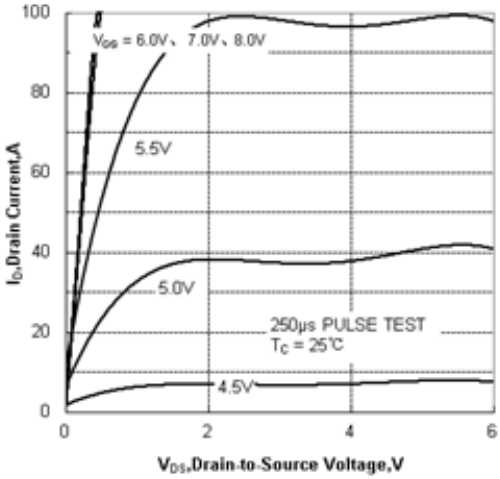


Figure 4 Typical Output Characteristics

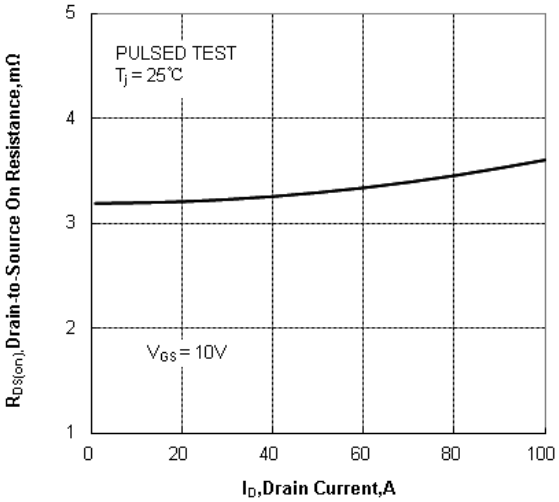


Figure 5 Drain-to-Source On Resistance vs Drain Current

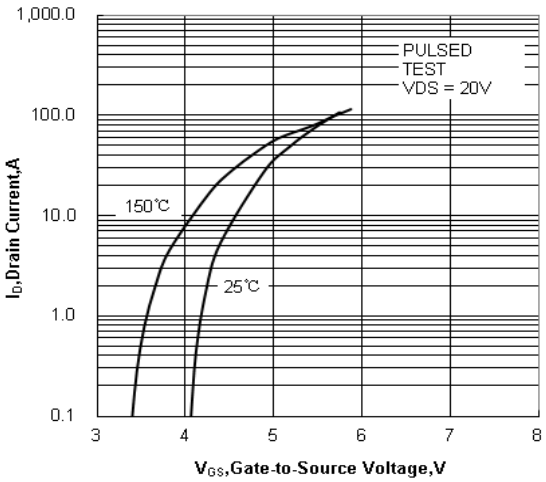


Figure 6 Typical Transfer Characteristics

Typical Characteristics (Continued)

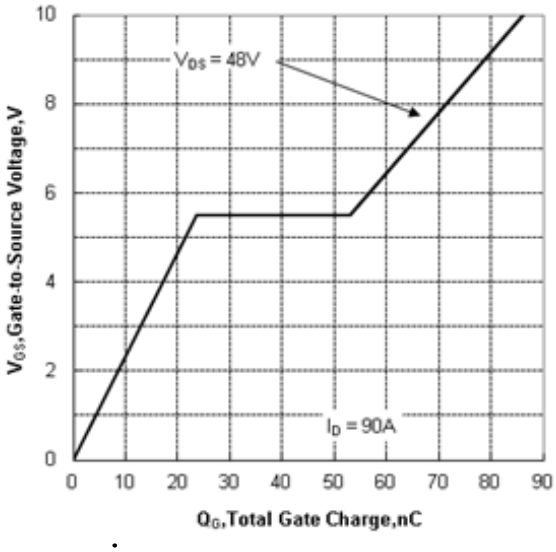


Figure 7 Typical Gate Charge vs Gate to Source Voltage

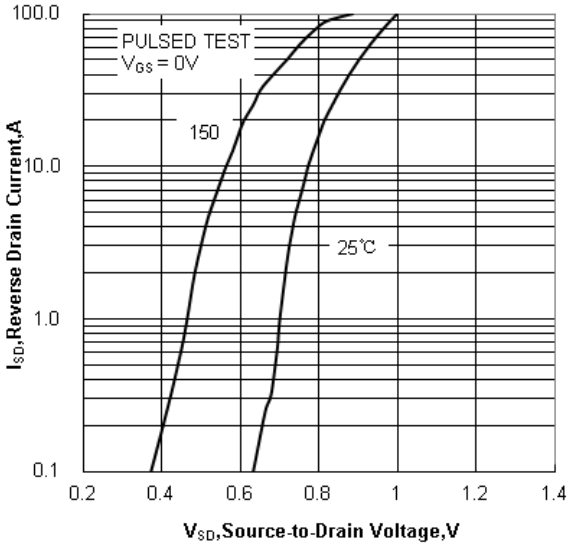


Figure 8 Typical Body Diode Transfer Characteristics

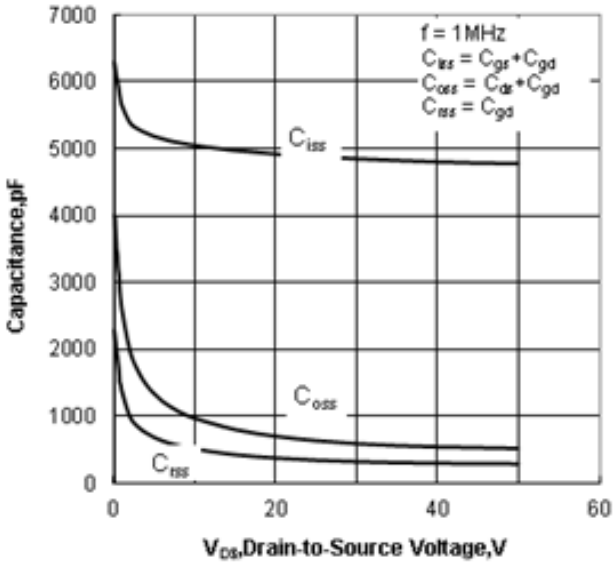


Figure 9 Typical Capacitance vs Drain to Source Voltage

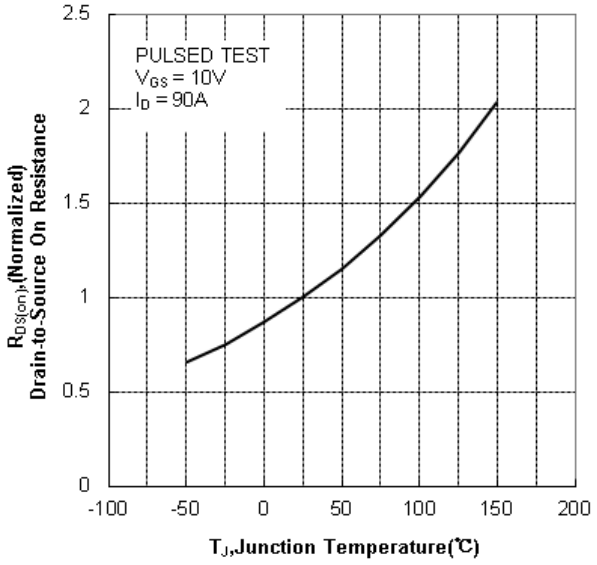


Figure 10 Typical Drian to Source on Resistance vs Junction Temperature

Typical Characteristics (Continued)

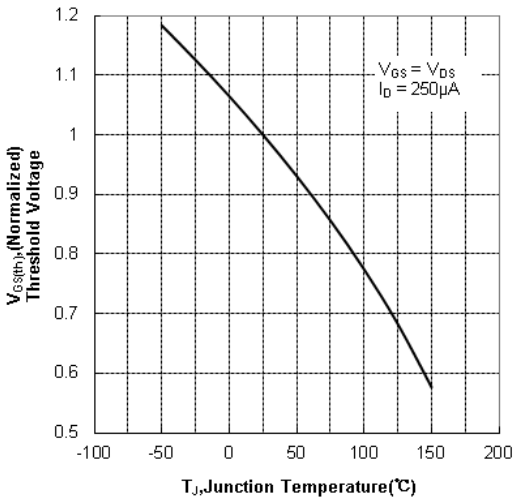


Figure 11 Typical Theshold Voltage vs Junction Temperature

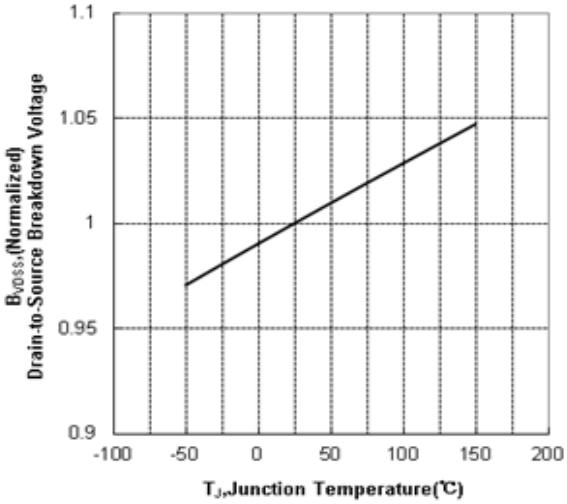


Figure 12 Typical Breakdown Voltage vs Junction Temperature

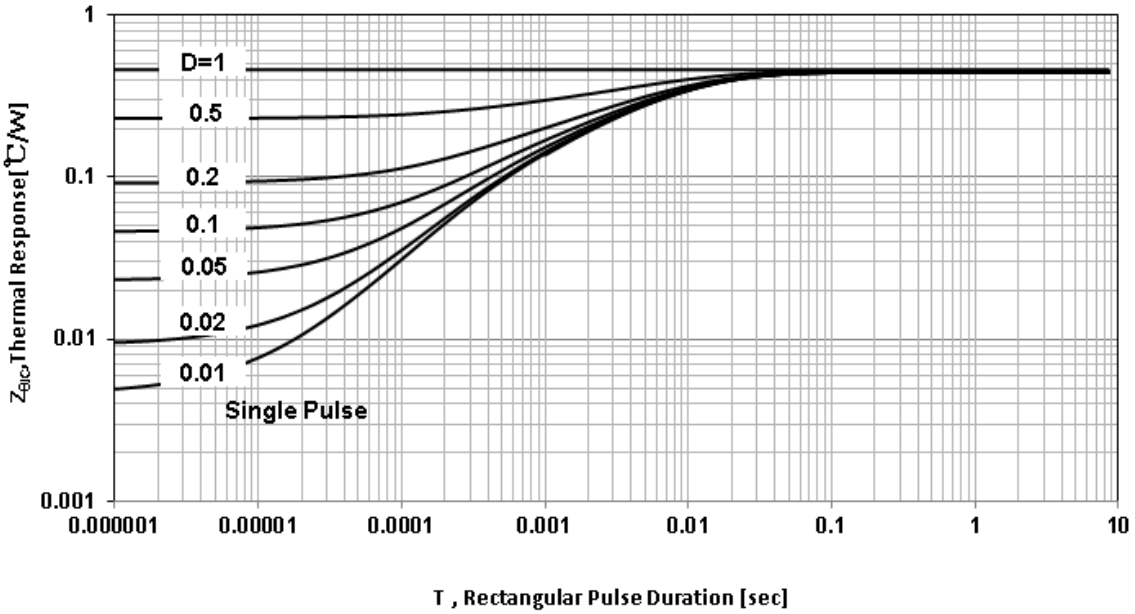
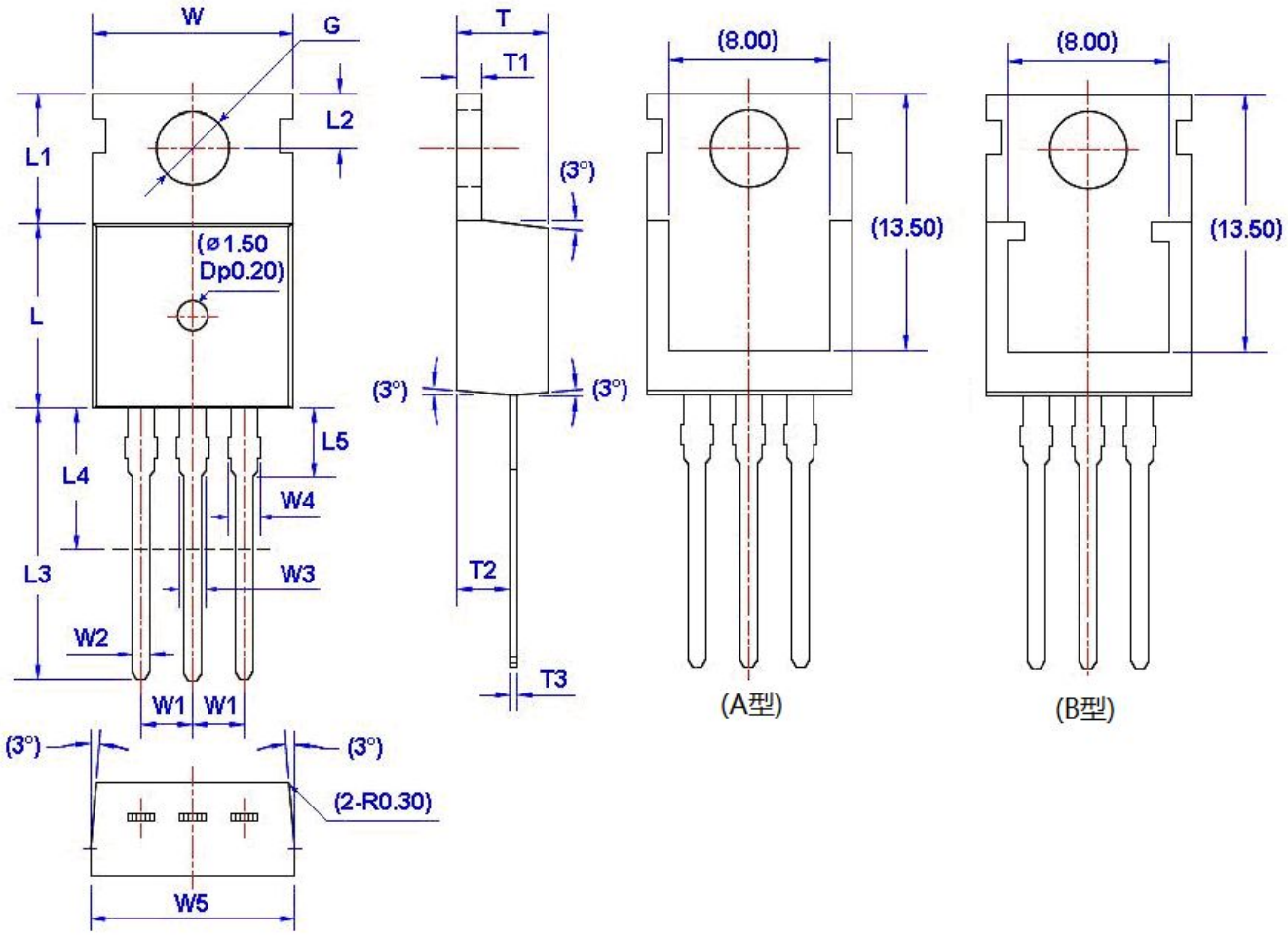


Figure 13 Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Dimension

TO-220

Unit:mm



Symbol	Size		Symbol	Size		Symbol	Size		Symbol	Size	
	Min	Max		Min	Max		Min	Max		Min	Max
W	9.66	10.28	W5	9.80	10.20	L4**	6.20	6.60	T3	0.45	0.60
W1	2.54（TYP）		L	9.00	9.40	L5	2.79	3.30	G(Φ)	3.50	3.70
W2	0.70	0.95	L1	6.40	6.80	T	4.30	4.70			
W3	1.17	1.37	L2	2.70	2.90	T1	1.15	1.40			
W4*	1.32	1.72	L3	12.70	14.27	T2	2.20	2.60			