Product Summary

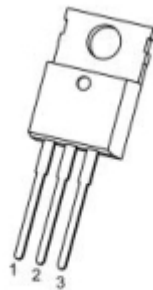| V$_{(BR)DSS}$	R$_{DS(on)TYP}$	I$_D$
200V	120mΩ@10V	18A

Feature

- Fast Switching
- Low Gate Charge and Rdson
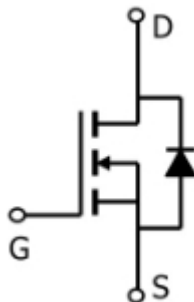- 100% Single Pulse avalanche energy Test

Applications

- DC-DC Converter
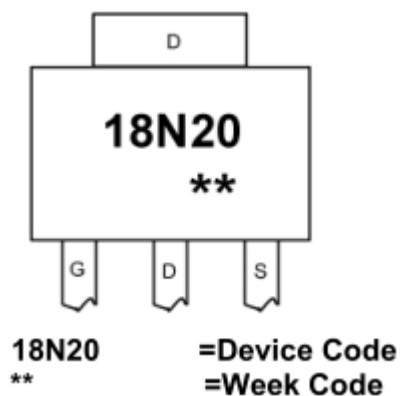- Ideal for high-frequency switching and synchronous rectification

Package

TO-220-3L-C(G:1 D:2 S:3)

Circuit diagram

Marking

18N20   =Device Code
**   =Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current1(TC=25℃)	I_D	18	W
Pulsed Drain Current	I_{DM}	72	A
Single Pulse Avalanche Energy [3]	E_{AS}	247	mJ
Total Power Dissipation(TC=25℃)	P_D	150	W
Thermal Resistance Junction- Case[1]	$R_{\theta JC}$	0.83	℃/ W
Storage Temperature Range	$T_{STG,}$	-55~ +150	℃
Operating Junction Temperature Range	$T_{J,}$	-55~ +150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

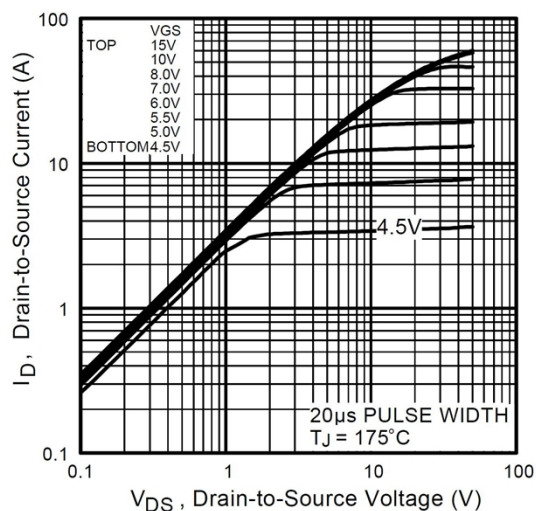| Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D =250µA	200			V
Bvdss Temperature Coefficient	Δ BVDSS/ΔTJ	I_D=1mA,Reference25℃		0.25		V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS} =160V,V_{GS} = 0V , T_J=25℃			25	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±30V , V_{DS}=0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250µA	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =16A		120	150	Ω
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		1220		pF
Output Capacitance	C_{oss}			270		
Reverse Transfer Capacitance	C_{rss}			66		
Switching Characteristics						
Total Gate Charge(4.5V)	Q_g	V_{DS}=100V, V_{GS}=10V, I_D=16A		67		nC
Gate-Source Charge	Q_{gS}			17		
Gate-Drain Charge	Q_{gd}			29		
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=250V, V_{GS}=10V, R_G=10Ω, I_D=14A		28		nS
Rise Time	T_r			47		
Turn-Off Delay Time	$T_{d(off)}$			57		
Fall Time	T_f			40		

Note :

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3. The EAS data shows Max. rating . The test condition is R_G =25Ω ,L=10mH
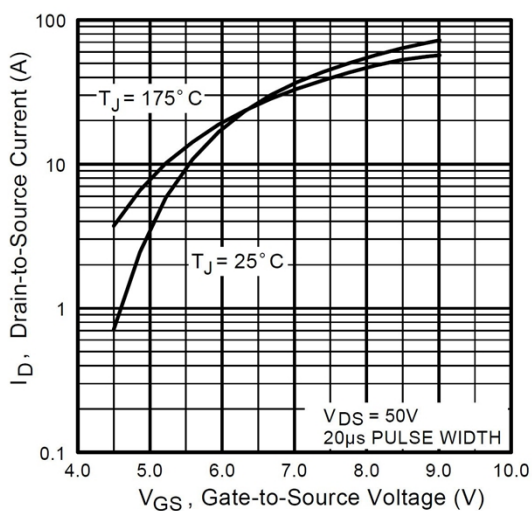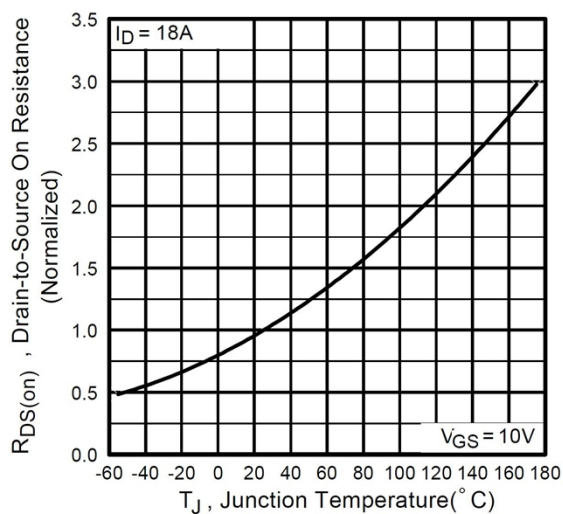
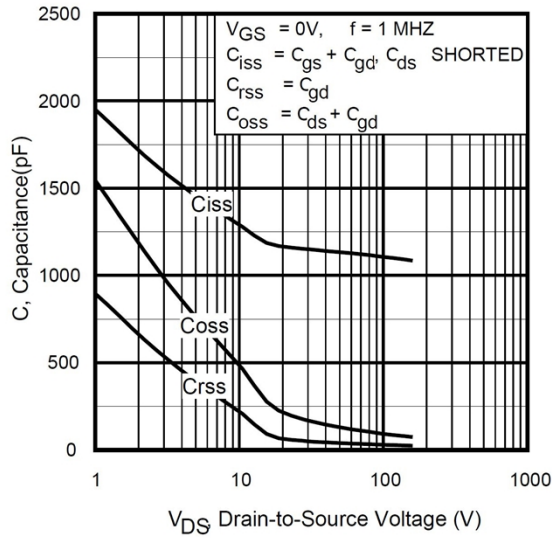## Typical Characteristics

Typical Output Characteristics
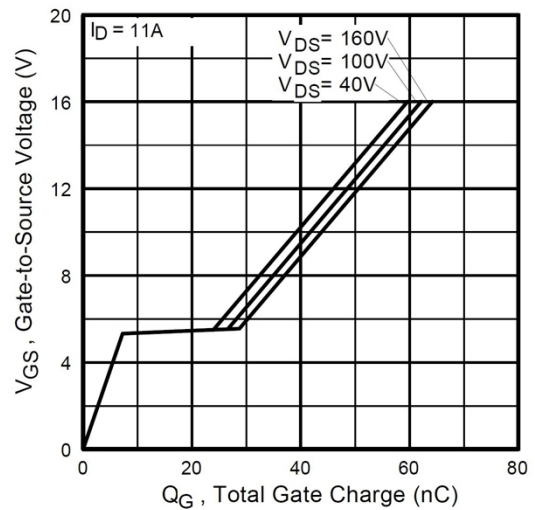

Typical Output Characteristics
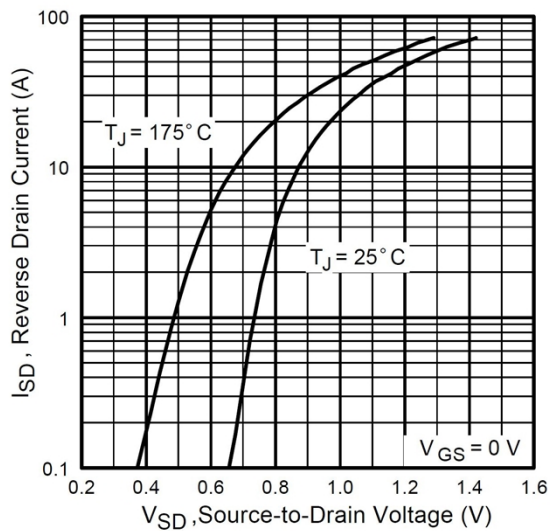

Typical Transfer Characteristics
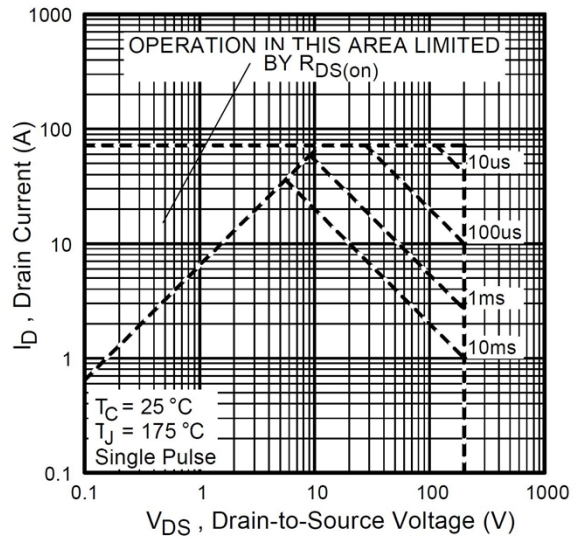

Normalized On-Resistance Vs. Temperature
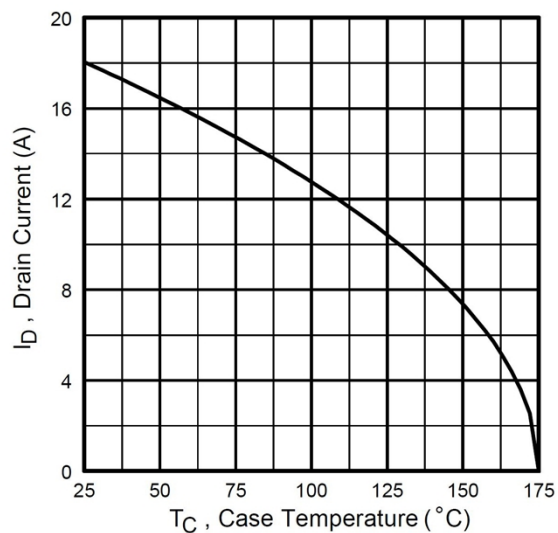
Typical Capacitance Vs. Drain-
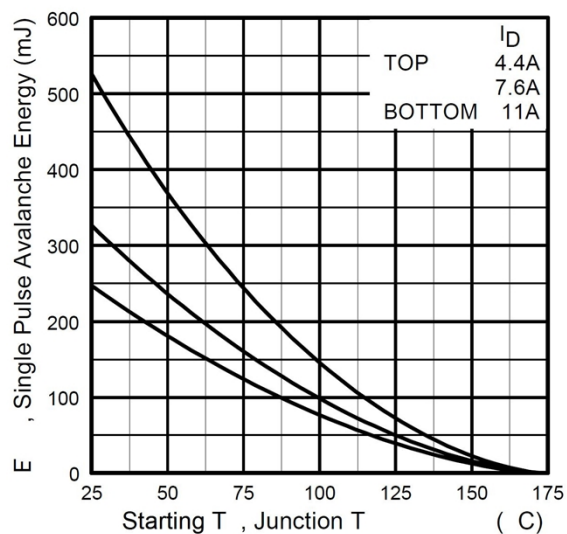to-Source Voltage

Typical Gate Charge VS.Gate-to-
Source Voltage

Typical Source-Drain Diode Typical Source-
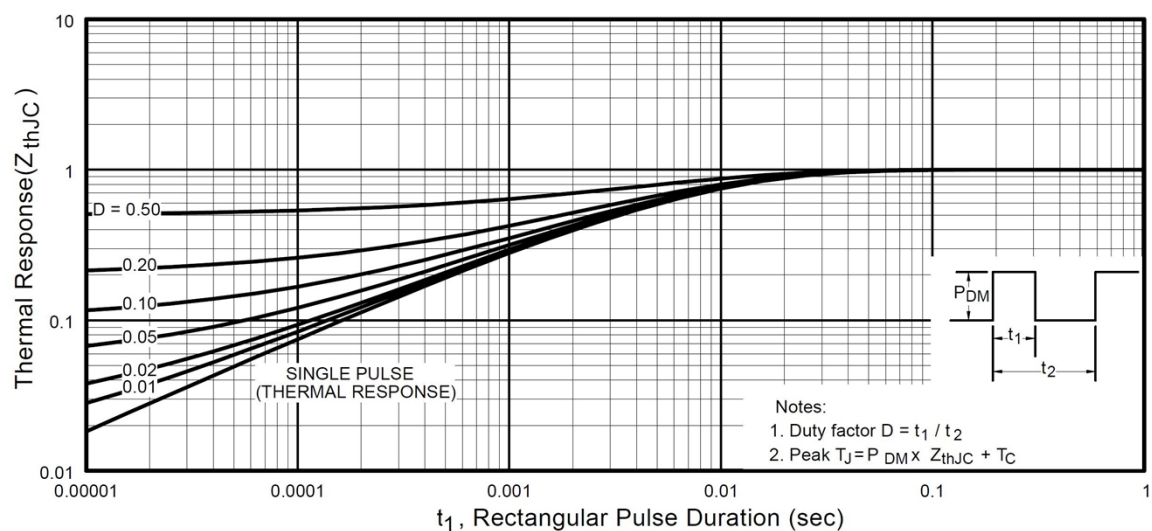Drain Diode Forward Voltage Forward Voltage

Maximum Safe Operating Area

Maximum Drain Current Vs. Case
Temperature
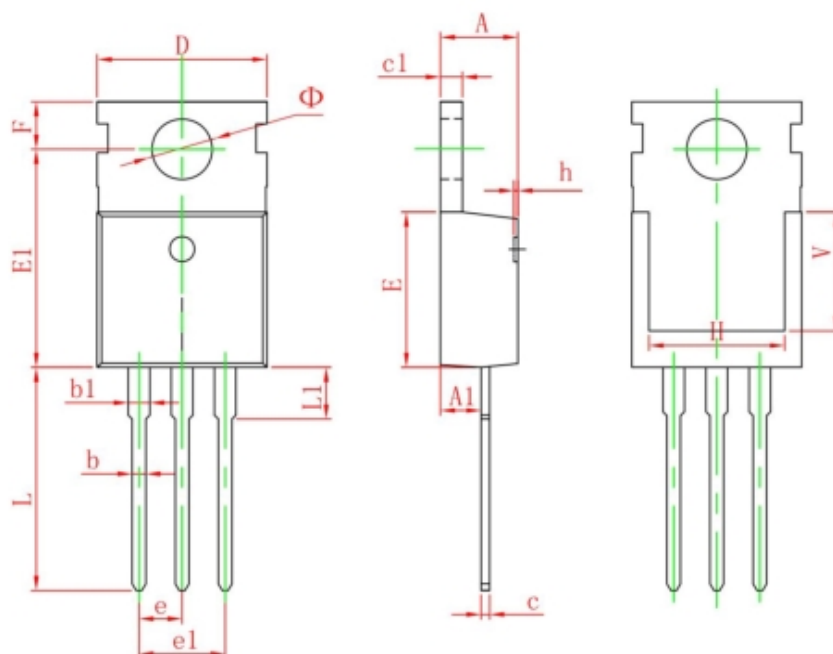
Maximum Avalanche Energy Vs.
Drain Current

Maximum Effective Transient Thermal Impedance, Junction-to-Case

Notes:
1. Duty factor $D = t_1 / t_2$
2. Peak $T_J = P_{DM} \times Z_{thJC} + T_C$

TO-220-3L-C Package Information

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150