

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	6.3mΩ@10V	120A

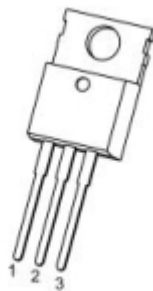
Feature

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

Application

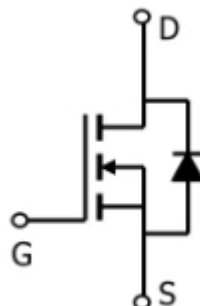
- Power switching application
- Battery management
- Uninterruptible power supply

Package

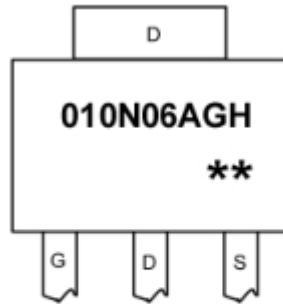


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



010N06AGH : Product code
****** : Week code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	120	A
Pulsed Drain Current ²	I _{DM}	480	A
Continuous diode forward current(T _C =25°C)	I _S	54	A
Power Dissipation(T _C =25°C)	P _D	160	W
Single Pulse Avalanche Energy ¹	E _{AS}	729	mJ
Thermal Resistance Junction-Case	R _{θJC}	0.78	°C/ W
Operation and storage temperature	T _{STG} , T _J	-55~ +150	°C

Electrical characteristics

($T_A=25^{\circ}\text{C}$, 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	100			V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain Cut-Off Current	I _{DSS}	V _{DS} =80V,V _{GS} = 0V			1	uA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±0.1	uA
Drain-Source on-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =40A		6.3	7.9	mΩ
Dynamic characteristics						
Total Gate Charge (4.5V)	Q _g	V _{DS} =50V, I _D =50A, V _{GS} =10V		61		nC
Gate-Source Charge	Q _{gS}			19		
Gate-Drain Charge	Q _{gd}			12		
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V, f=1MHz		4750		pF
Output Capacitance	C _{oss}			810		
Transfer Capacitance	C _{rss}			46		
Turn-On Delay Time	T _{d(on)}	V _{GS} =10V, V _{DS} =50V, I _D =50A, R _G =4.7Ω		14		nS
Rise Time	T _r			56		
Turn-Off Delay Time	T _{d(off)}			37		
Fall Time	T _f			9		
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A			1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 50A, dI/dt =100A/μs		61		ns
Body Diode Reverse Recovery Charge	Q _{rr}			140		nC

Notes:

1 EAS condition : $T_j = 25^{\circ}\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega$

Typical Characteristics

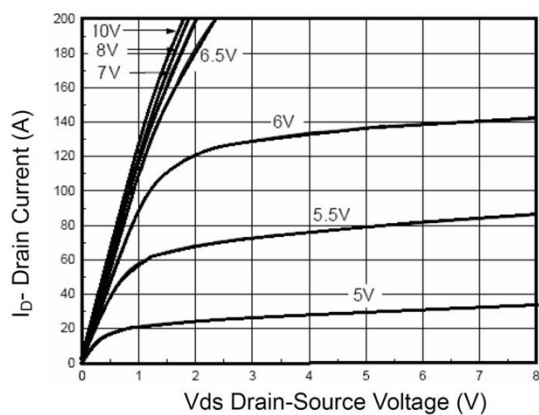


Figure 1 Output Characteristics

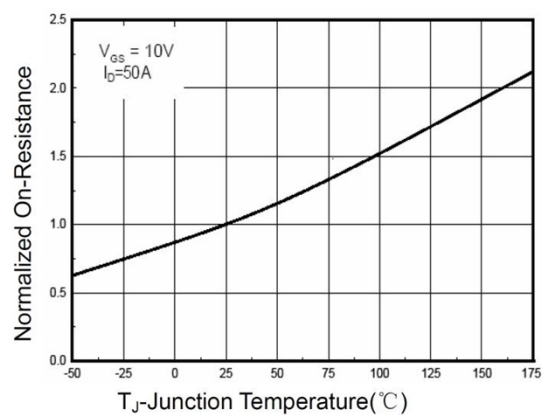


Figure 4 Rdson-Junction Temperature

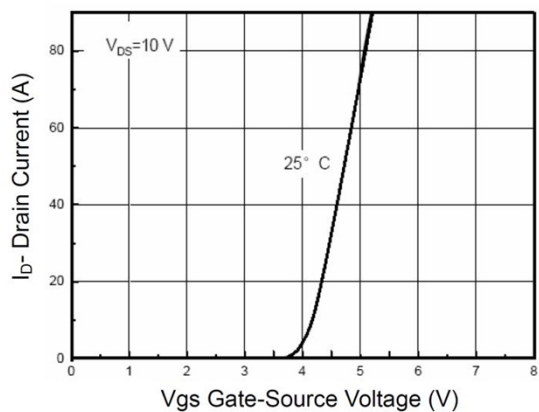


Figure 2 Transfer Characteristics

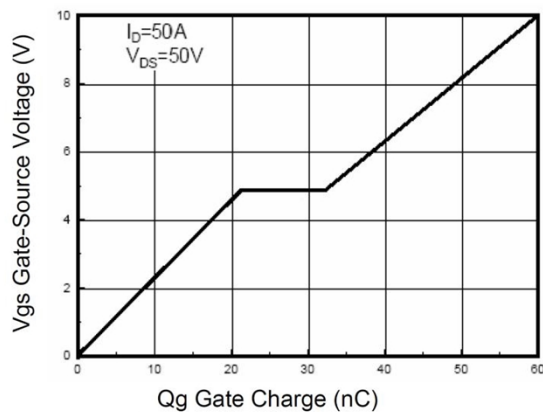


Figure 5 Gate Charge

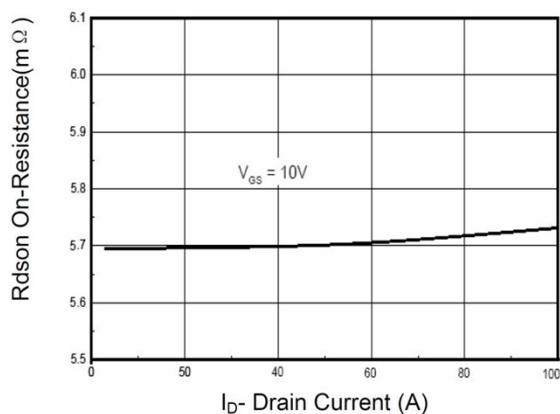


Figure 3 Rdson- Drain Current

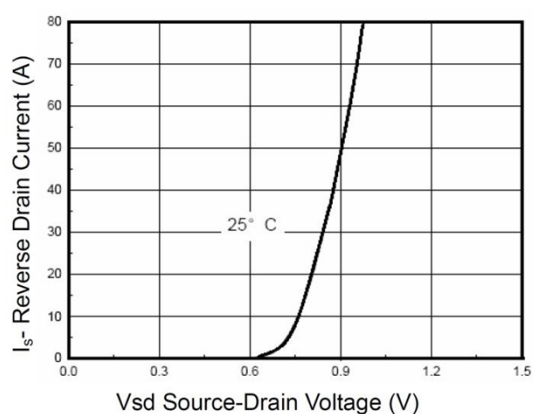


Figure 6 Source- Drain Diode Forward

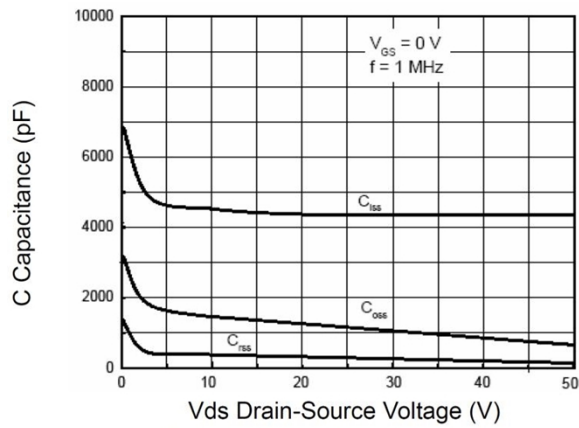


Figure 7 Capacitance vs Vds

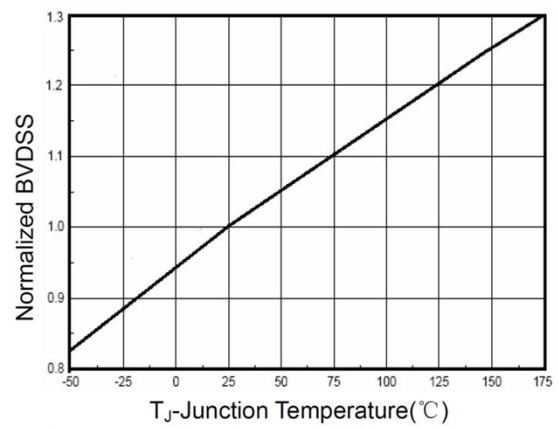
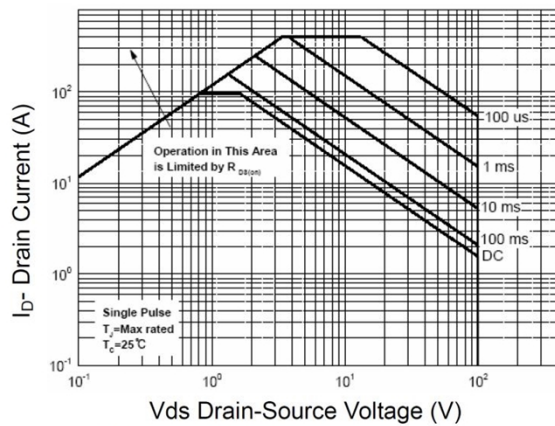

Figure 9 BV_{DSS} vs Junction Temperature


Figure 8 Safe Operation Area

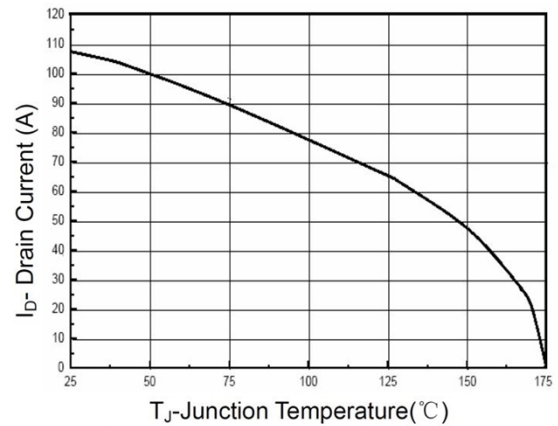


Figure 10 Current De-rating

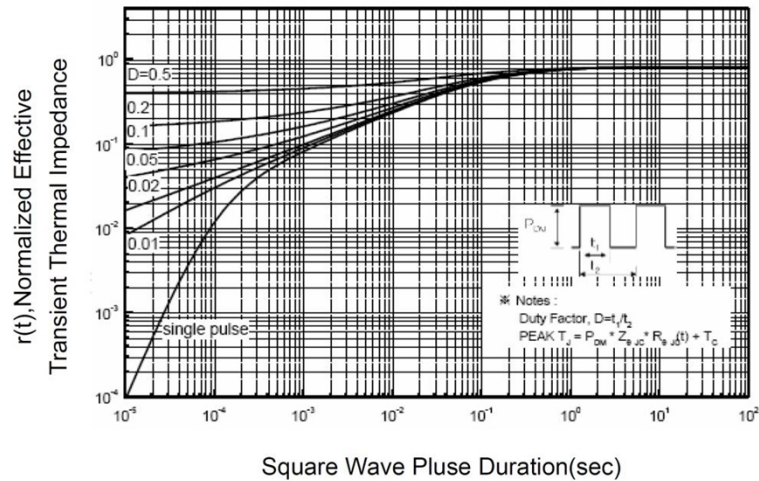
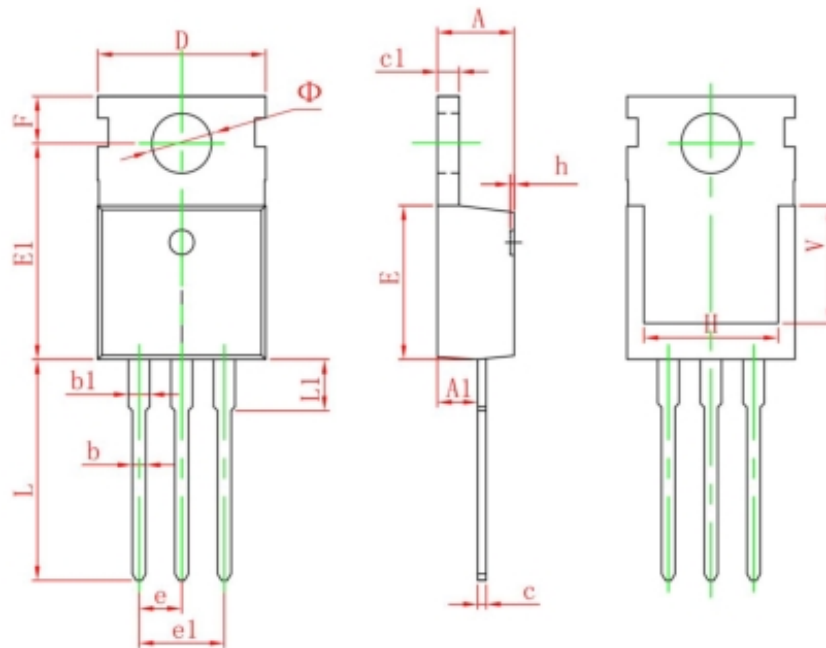


Figure 11 Normalized Maximum Transient Thermal Impedance

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