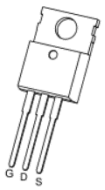
GPM014N03LTB

30V N-Channel MOSFET

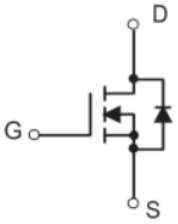
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.8mΩ@10V	165A
	2.4mΩ@4.5V	

TO-220-3L-C



Schematic diagram



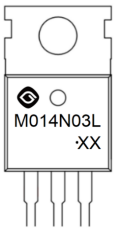
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

MARKING:



M014N03L = Device Code

XX = Date Code

Solid Dot = Green Indicater

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	165	A
Pulsed Drain Current[2]		I_{DM}	660	A
Single Pulsed Avalanche Current[3]		I_{AS}	64	A
Single Pulsed Avalanche Energy[3]		E_{AS}	1024	mJ
Power Dissipation[5]	T_C = 25℃	P_D	108	W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.15	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.5	3.0	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 30A		1.8	2.4	mΩ
		V_{GS} = 4.5V, I_D = 10A		2.4	3.5	
Forward Transconductance	g_{FS}	V_{DS} = 10V, I_D =10A	10			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		7449		pF
Output Capacitance	C_{oss}			1201		
Reverse Transfer Capacitance	C_{rss}			1091		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.67		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 10A		147.7		nC
Gate-source Charge	Q_{gs}			19.5		
Gate-drain Charge	Q_{gd}			29.0		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_L = 15Ω R_G = 2.5Ω		26		ns
Turn-on Rise Time	t_r			24		
Turn-off Delay Ttime	$t_{d(off)}$			91		
Turn-off Fall Time	t_f			39		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 10A			1.2	V

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

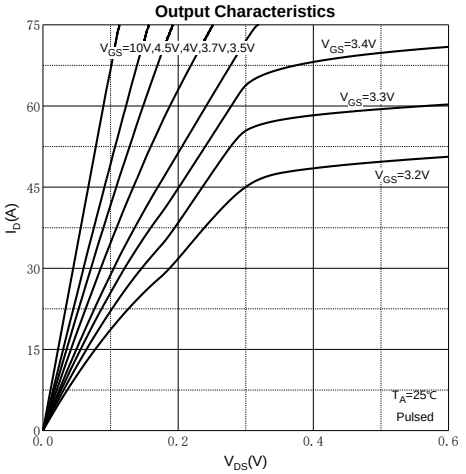
3.E_{AS} condition: V_{DD} = 15V,V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

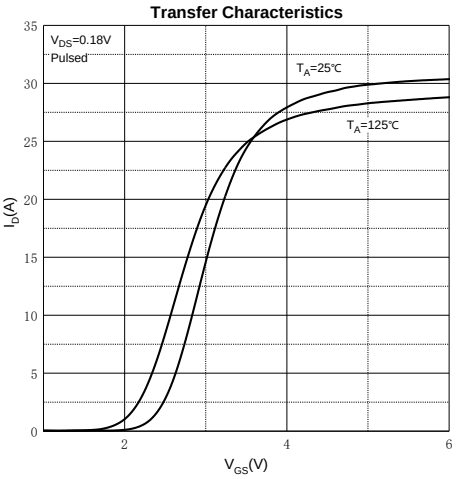
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

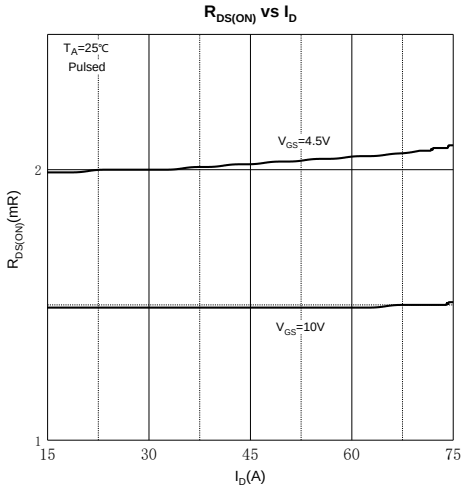
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

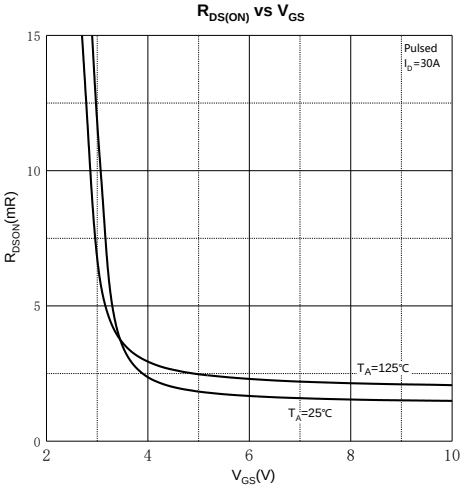
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

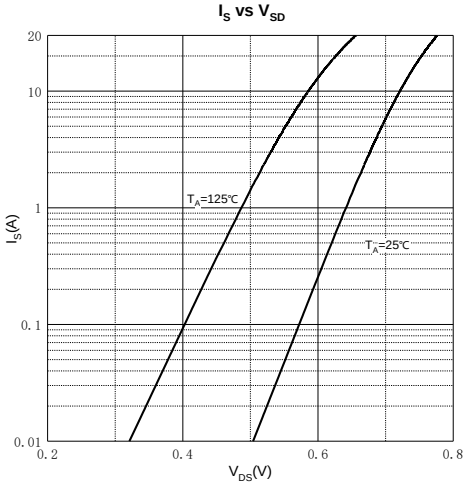
Typical Characteristics

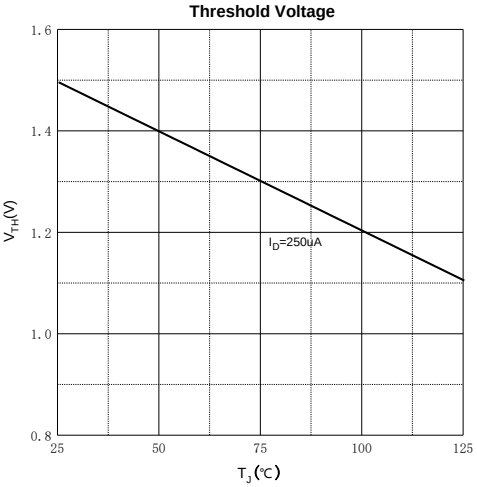




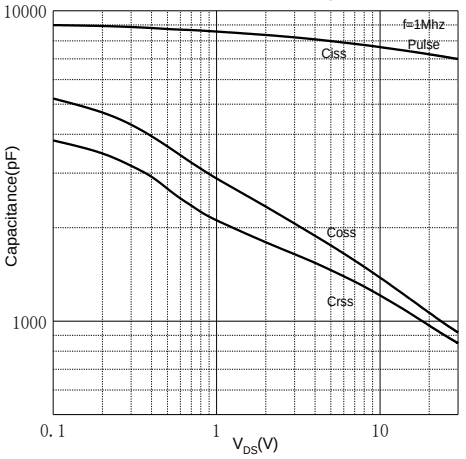




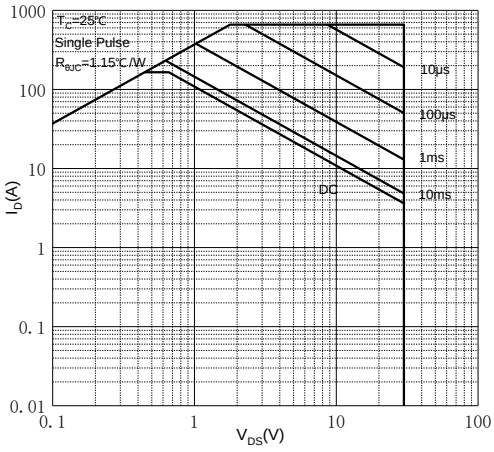




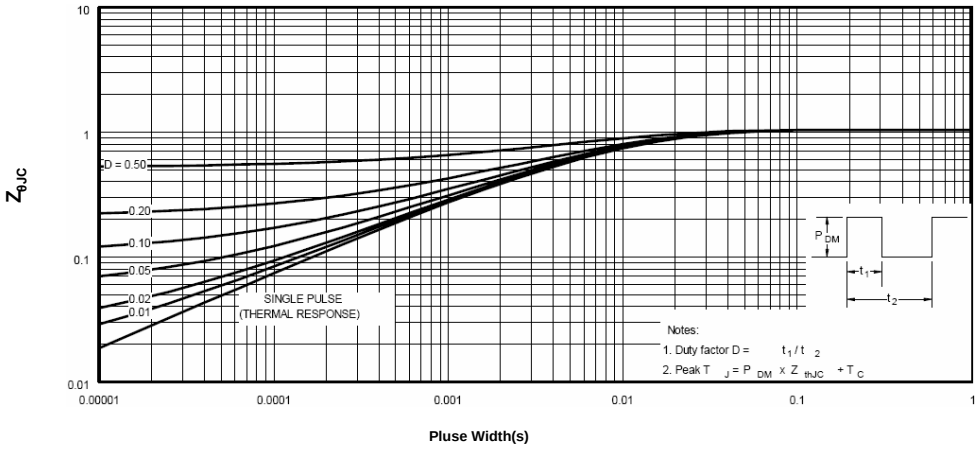
Capacitance vs V_{DS}



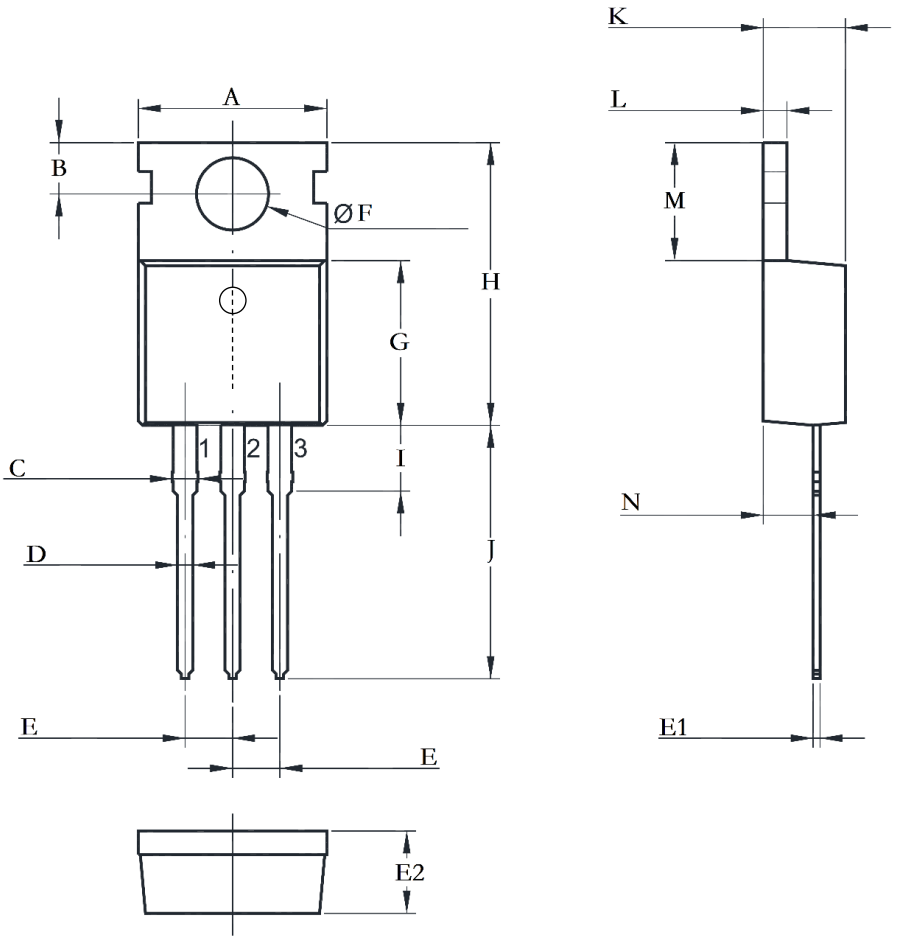
Maximum Forward Biased Safe Operating Area



Normalized Maximum Transient Thermal Impedance



TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.600	10.400	0.378	0.409
B	2.800TYP		0.110TYP	
C	1.200	1.600	0.047	0.063
D	0.600	1.000	0.024	0.039
E	2.540TYP		0.100TYP	
E1	0.300	0.700	0.012	0.028
E2	4.300	4.700	0.169	0.185
F	3.400	4.000	0.134	0.157
G	8.850	9.350	0.348	0.368
H	14.600	16.100	0.575	0.634
I	2.800	4.200	0.110	0.165
J	12.600	14.800	0.496	0.583
K	4.300	4.700	0.169	0.185
L	1.000	1.400	0.039	0.055
M	5.840	7.000	0.230	0.276
N	1.800	2.900	0.071	0.114