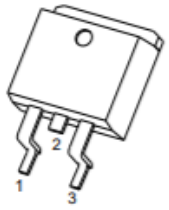
GPM025N03LTH

30V N-Channel MOSFET

Product Summary

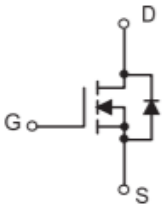
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	2.5mΩ@10V	140A
	2.9mΩ@4.5V	

TO-263-2L



1. GATE
2. DRAIN
3. SOURCE

Schematic diagram



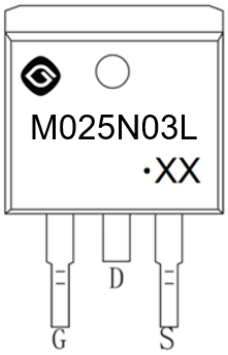
Feature

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

Application

- Power Switching Application

MARKING:



M025N03L = 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	140	A
Continuous Drain Current[1]	T_C = 100℃	I_D	90	A
Pulsed Drain Current[2]		I_{DM}	560	A
Single Pulsed Avalanche Current[3]		I_{AS}	53	A
Single Pulsed Avalanche Energy[3]		E_{AS}	702	mJ
Power Dissipation[5]	T_C = 25℃	P_D	150	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	50	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1	℃/W
Junction Temperature		T_J	175	℃
Storage Temperature		T_{STG}	-55~ +175	℃

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} = 24V, 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 = 20A		2.5	3.1	mΩ
		V_{GS} = 4.5V, I_D = 10A		2.9	3.8	
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		5144		pF
Output Capacitance	C_{oss}			721		
Reverse Transfer Capacitance	C_{rss}			688		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 20A		120		nC
Gate-source Charge	Q_{gs}			16		
Gate-drain Charge	Q_{gd}			37		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_L = 0.75Ω R_G = 3Ω		18		ns
Turn-on Rise Time	t_r			22		
Turn-off Delay Ttime	$t_{d(off)}$			52		
Turn-off Fall Time	t_f			20		
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%.

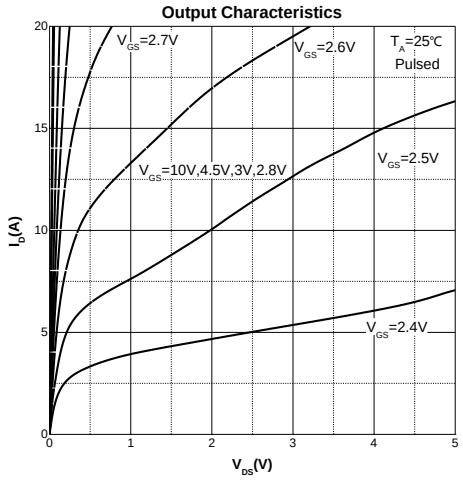
3.E_{AS} condition: V_{DD} = 25V,V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

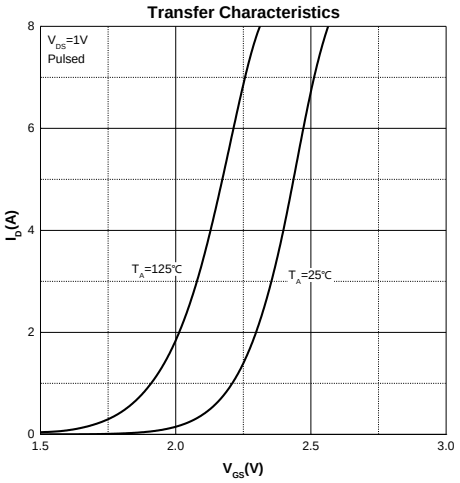
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

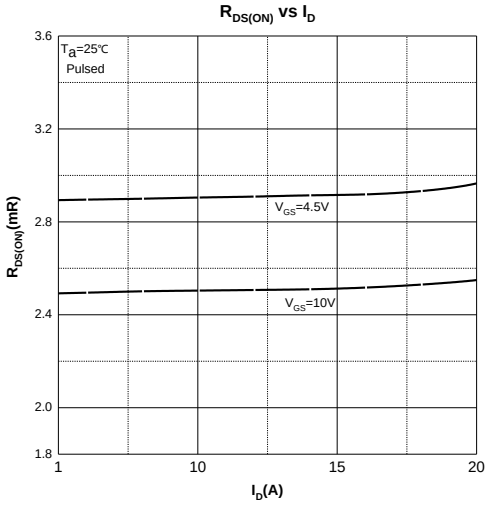
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

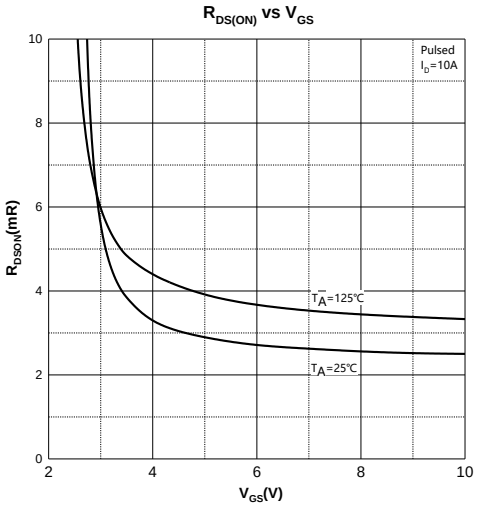
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

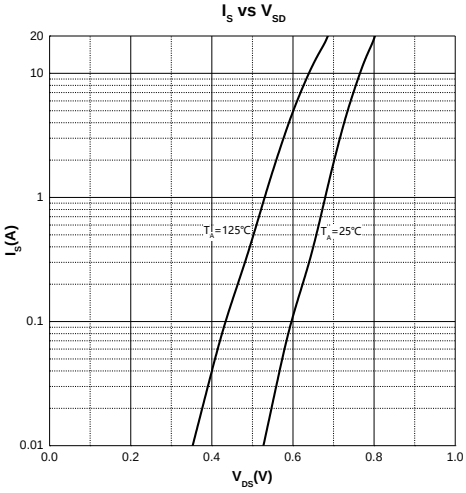
Typical Characteristics

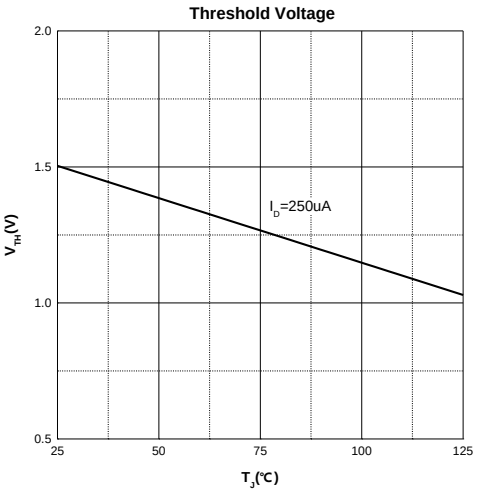


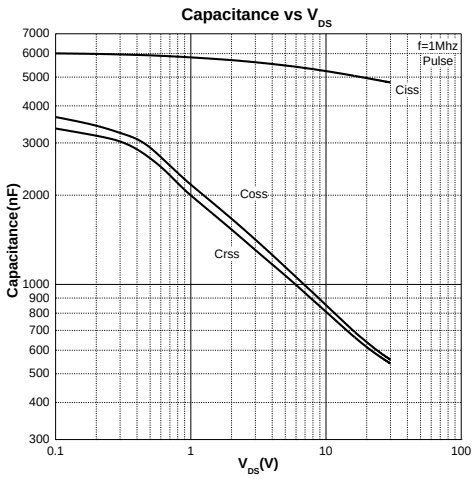


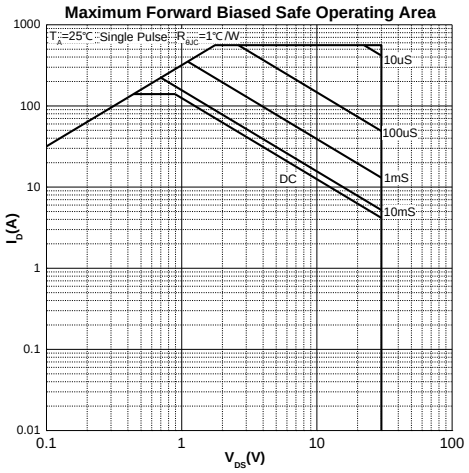


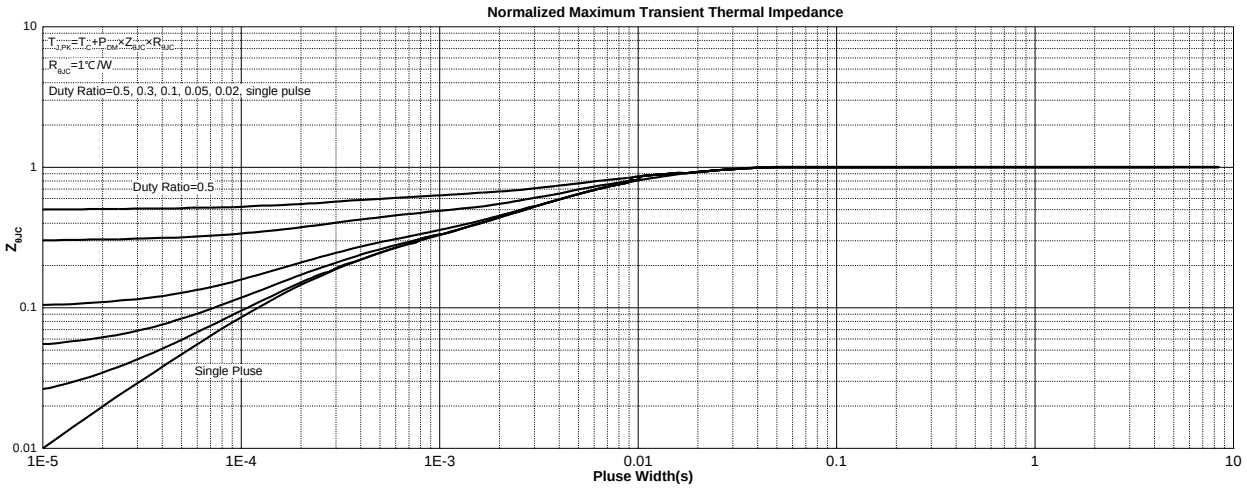




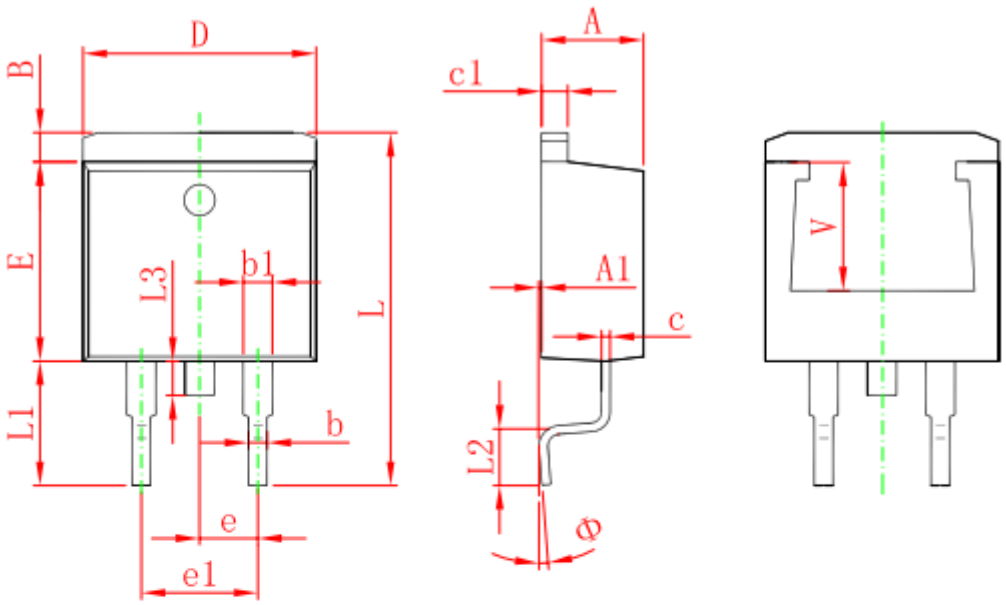



Capacitance vs V_{DS}
f=1Mhz
Pulse
Ciss
Coss
Crss
Capacitance(nF)
V_{DS}(V)


Maximum Forward Biased Safe Operating Area
T_A=25℃,Single Pulse,$R_{\theta JC}$=1℃/W
10uS
100uS
1mS
10mS
DC
I_D(A)
V_{DS}(V)


Normalized Maximum Transient Thermal Impedance
$T_{J,PK}=T_C+P_{DM}\times Z_{\theta JC}\times R_{\theta JC}$
$R_{\theta JC}$=1℃/W
Duty Ratio=0.5, 0.3, 0.1, 0.05, 0.02, single pulse
Duty Ratio=0.5
Single Pluse
$Z_{\theta JC}$
Pluse Width(s)

TO-263-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	