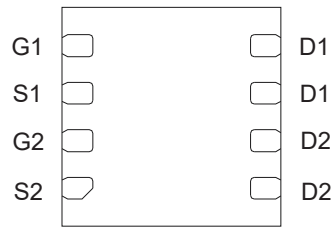
GPM380NP03NGC

30V N-Channel + P-Channel MOSFET

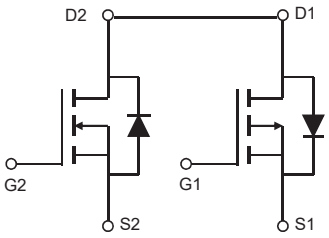
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)\ TYP}$	I_D
-30V	30mΩ@-10V	-6A
	50mΩ@-4.5V	
30V	29mΩ@10V	6A
	40mΩ@4.5V	

DFN3x3-8L



Schematic diagram



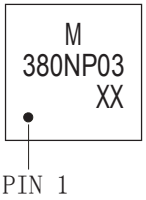
Feature

- Low drain-source ON-resistance
- High forward transfer admittance
- Low leakage current

Application

- Low voltage applications

MARKING:



M380NP03 = Device Code

XX = Date Code

Preliminary

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

Parameter	Symbol	Value	Unit	Test Condition
P-MOSFET				
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current(1)	I_D	-6	A	T_A =25℃
Pulsed Drain Current	I_{DM}	-24	A	
N-MOSFET				
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current	I_D	6	A	T_A =25℃
Pulsed Drain Current(1)	I_{DM}	24	A	
Temperature and Thermal Resistance				
Thermal Resistance(2)	$R_{\theta JA}$	44.6	℃/W	from Junction to Ambient
Power Dissipation	P_D	2.8	W	T_A =25℃
Junction Temperature	T_J	150	℃	
Storage Temperature	T_{STG}	-55~ +150	℃	

P-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static 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
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.4	-1.9	-2.4	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		30	38	mΩ
		V_{GS} =-4.5V, I_D =-4A		50	64	
Forward tranconductance	g_{FS}	V_{DS} =-10V, I_D =-5A		16		S
Diode forward voltage(3)	V_{DS}	I_S=-5A, V_{GS} = 0V			-1.2	V
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz		650		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			85		
Total gate charge	Q_g	V_{DS}=-15V,I_D=-5A,V_{GS}=-10V		15		nC
Gate-source charge	Q_{gs}			4		
Gate-drain charge	Q_{gd}			7.5		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15V,I_D=-5A,			15	nS
Turn-on rise time	t_r	V_{GS}=-10V,R_{GEN}=1Ω			15	
Turn-off delay time	$t_{d(off)}$	R_L=3Ω			70	
Turn-off fall time	t_f				25	

N-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static 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
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.0	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D = 5A		29	38	mΩ
		V_{GS} =4.5V, I_D = 5A		40	52	
Forward tranconductance	g_{FS}	V_{DS} =10V, I_D = 5A		12		S
Diode Forward voltage(3)	V_{DS}	I_S=5A, V_{GS} = 0V			1.2	V
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz		310		pF
Output Capacitance	C_{oss}			82		
Reverse Transfer Capacitance	C_{rss}			36		
Total gate charge	Q_g	V_{DS}=15V,I_D=5A,V_{GS}=10V		13		nC
Gate-source charge	Q_{gs}			3		
Gate-drain charge	Q_{gd}			4.5		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, R_L=1.8Ω V_{GS}=10V,R_{GEN}=3Ω			10	ns
Turn-on rise time	t_r				8	
Turn-off delay time	$t_{d(off)}$				30	
Turn-off fall time	t_f				5	

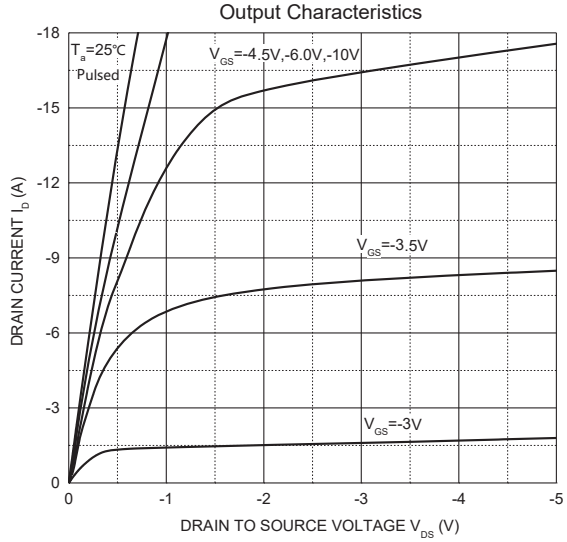
Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

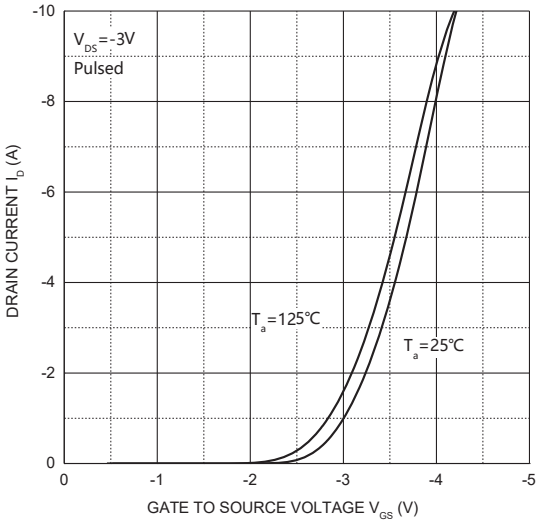
Typical Electrical and Thermal Characteristics

P-Channel MOS

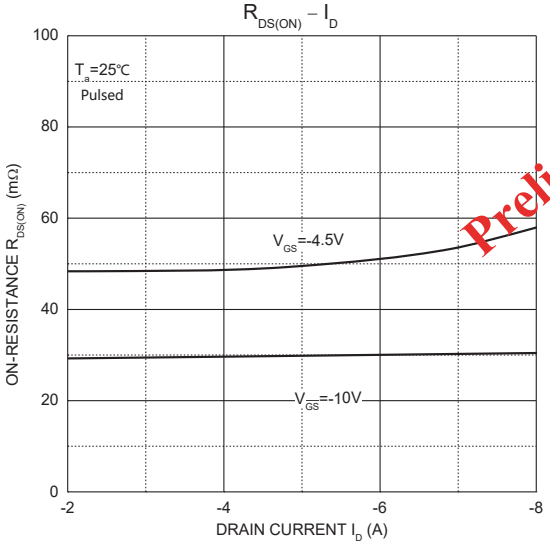
Output Characteristics



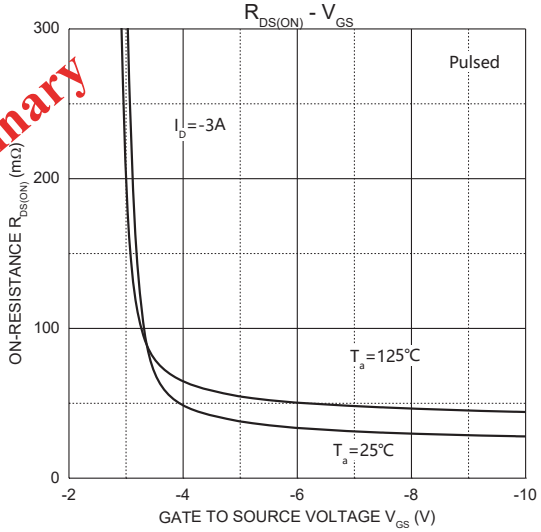
Transfer Characteristics



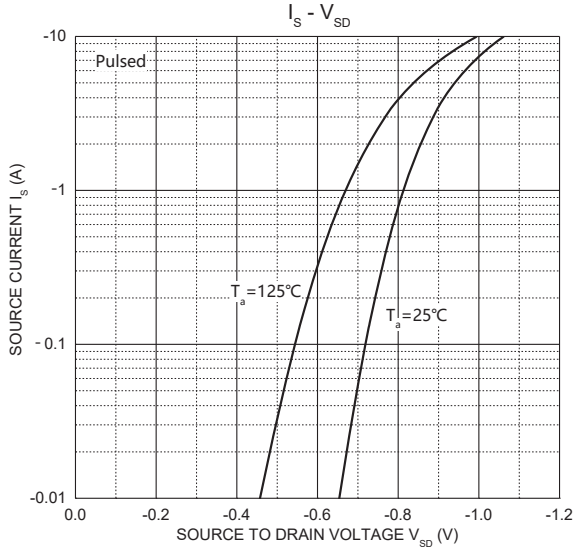
$R_{DS(ON)}$ – I_D



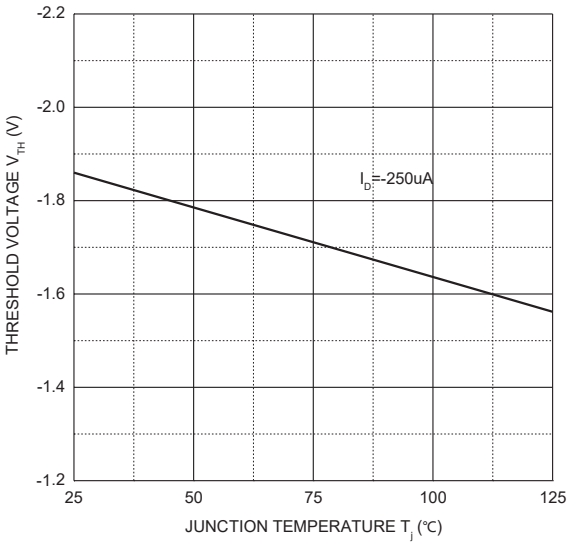
$R_{DS(ON)}$ - V_{GS}



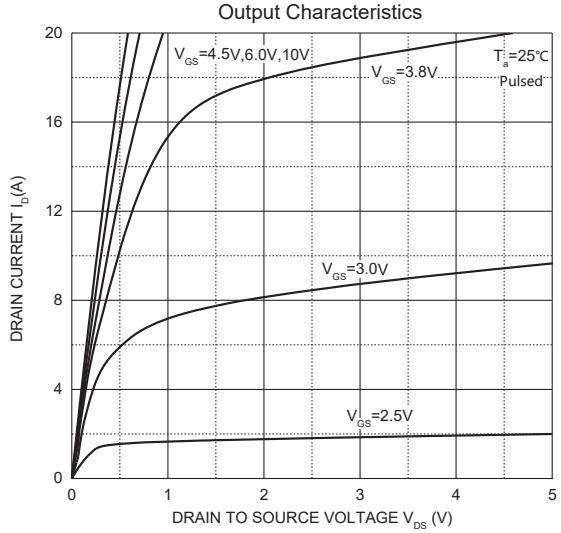
I_S - V_{SD}



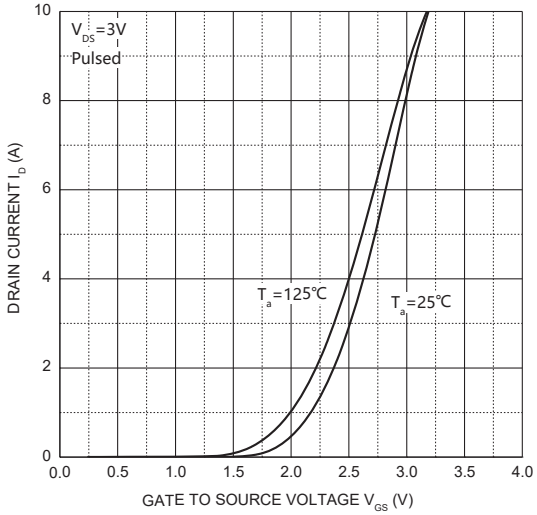
Threshold Voltage



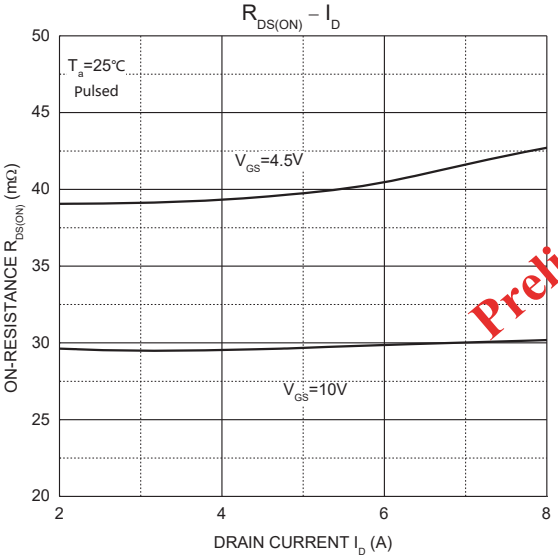
Output Characteristics



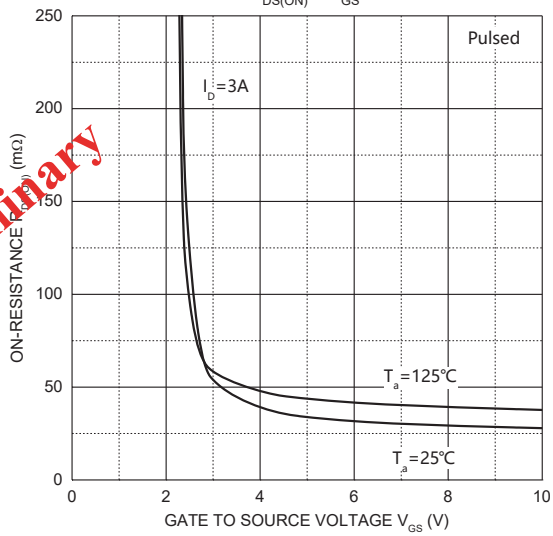
Transfer Characteristics



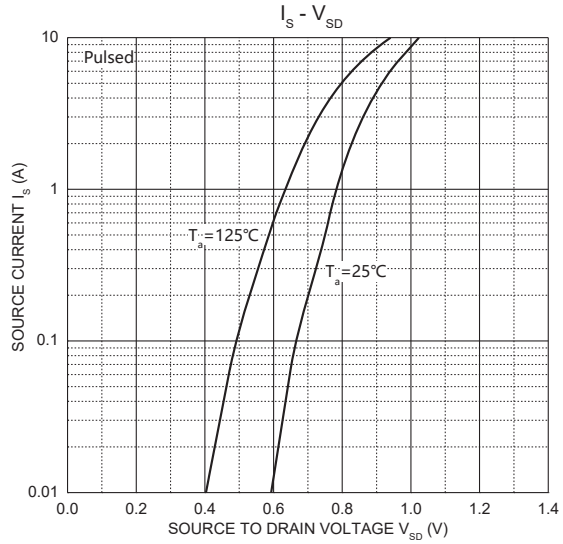
$R_{DS(ON)}$ – I_D



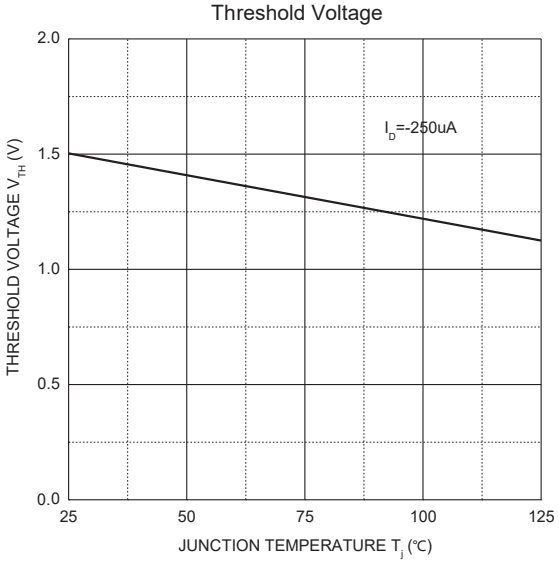
$R_{DS(ON)}$ - V_{GS}



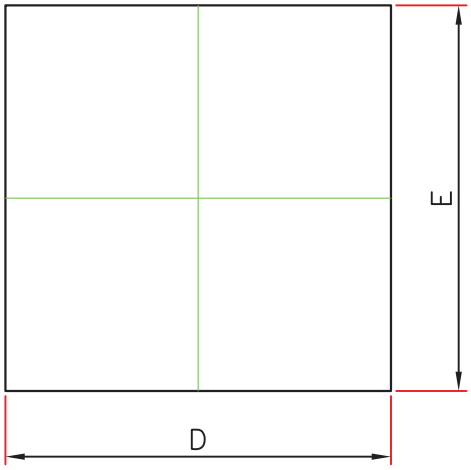
I_S - V_{SD}



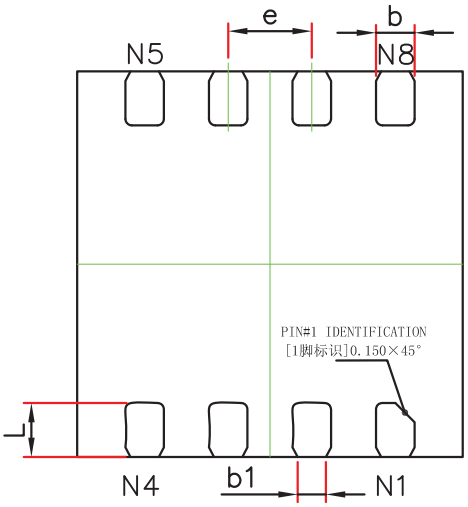
Threshold Voltage



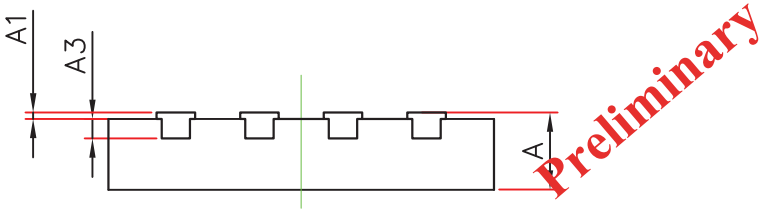
DFN3X3-8L Package Information



TOP VIEW
[顶视图]



BOTTOM VIEW
[背视图]



SIDE VIEW
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
b	0.250	0.350	0.010	0.014
b1	0.220REF.		0.009REF.	
e	0.650BSC.		0.026BSC.	
L	0.370	0.470	0.015	0.019