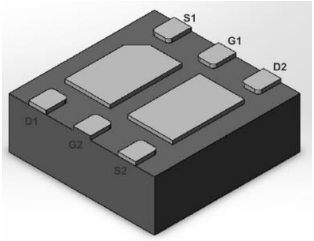
GPM700NP03LFF

30V N- and P-Channel MOSFET

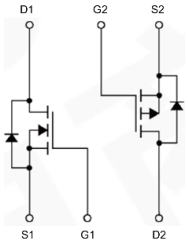
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	30mΩ@10V	3.16A
	40mΩ@4.5V	
-30V	55mΩ@-10V	-2.7A
	75mΩ@-4.5V	

DFN2×2-6L



Schematic diagram



Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge

Application

- Load Switch
- DC/DC Converter

MARKING:

70NP03 = Device

CodeXX = Date Code

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

Parameter		Symbol	Value	Value	Unit
Drain - Source Voltage		V_{DS}	30	-30	V
Gate - Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current[1,5]	T_A = 25℃	I_D	3.16	-2.7	A
Pulsed Drain Current[2]		I_{DM}	12.6	10.8	A
Power Dissipation[4,5]	T_A = 25℃	P_D	1.8	1.8	W
Thermal Resistance from Junction to Ambient[5]		$R_{\theta JA}$	69	69	℃/W
Junction Temperature		T_J	150	150	℃
Storage Temperature		T_{STG}	-55~ +150	-55~ +150	℃

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

NMOS:

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[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.6	3	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 4A		30	45	mΩ
		V_{GS} = 4.5V, I_D = 4A		40	80	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		293		pF
Output Capacitance	C_{oss}			40		
Reverse Transfer Capacitance	C_{rss}			34		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 4A		7.7		nC
Gate-source Charge	Q_{gs}			1.2		
Gate-drain Charge	Q_{gd}			1.7		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_L = 7.5Ω, R_G = 3Ω		3		ns
Turn-on Rise Time	t_r			4		
Turn-off Delay Ttime	$t_{d(off)}$			23		
Turn-off Fall Time	t_f			7		
Source - Drain Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	V_{GS} = 0V, I_S = 1.67A			1.2	V

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

PMOS:

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[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.5	-3	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -4A		62	78	mΩ
		V_{GS} = -4.5V, I_D = -4A		89	140	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		304		pF
Output Capacitance	C_{oss}			49		
Reverse Transfer Capacitance	C_{rss}			40		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		5.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -4A		9.0		nC
Gate-source Charge	Q_{gs}			1.7		
Gate-drain Charge	Q_{gd}			2.6		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -10V, R_L = 1.8Ω, R_G = 3Ω		8		ns
Turn-on Rise Time	t_r			6		
Turn-off Delay Ttime	$t_{d(off)}$			26		
Turn-off Fall Time	t_f			12		
Source - Drain Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	V_{GS} = 0V, I_S = -1.67A			-1.2	V

Notes :

1.The maximum current rating is limited by package.

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

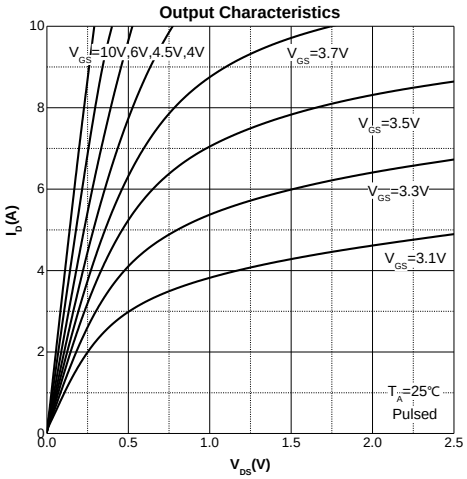
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

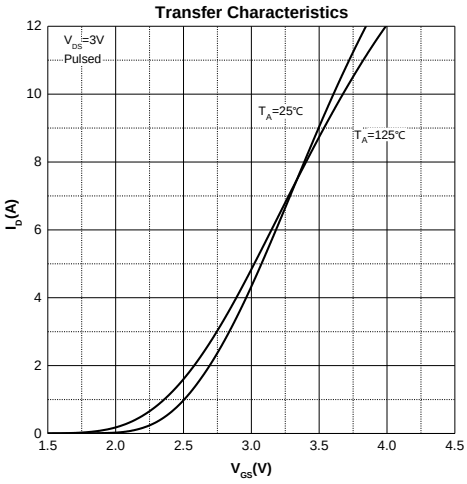
4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.

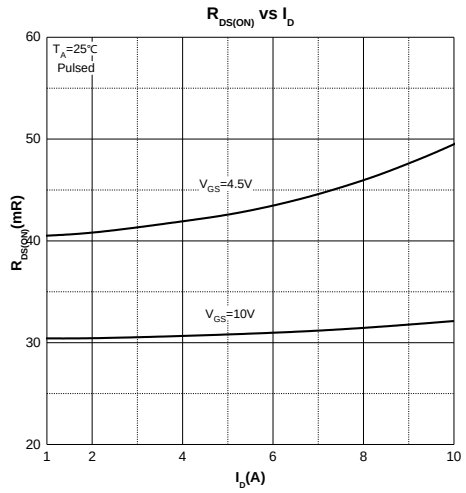
5.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

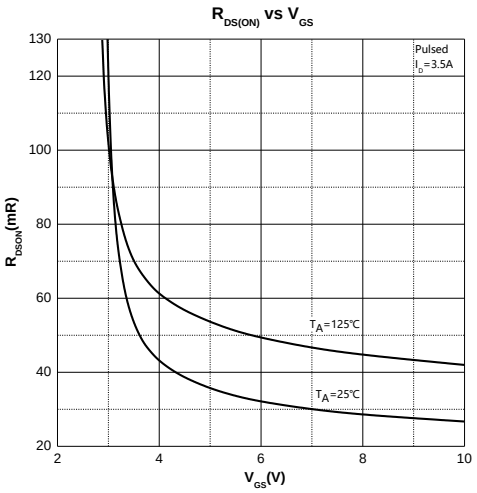
Typical Characteristics

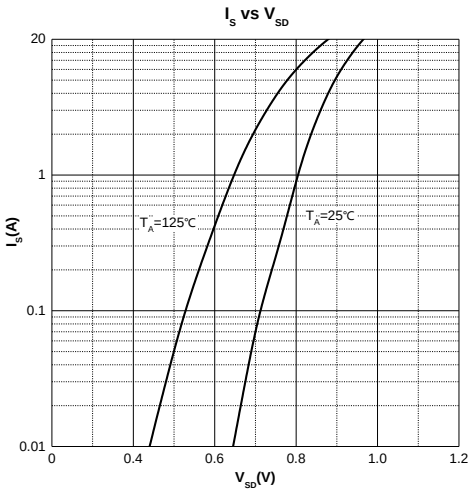
NMOS:

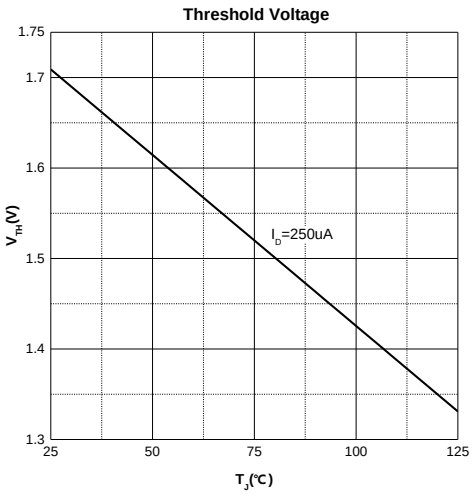






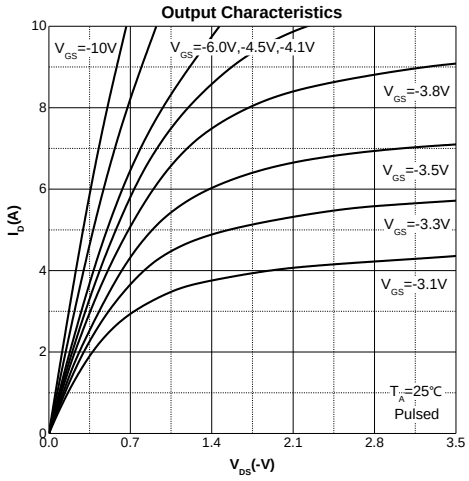


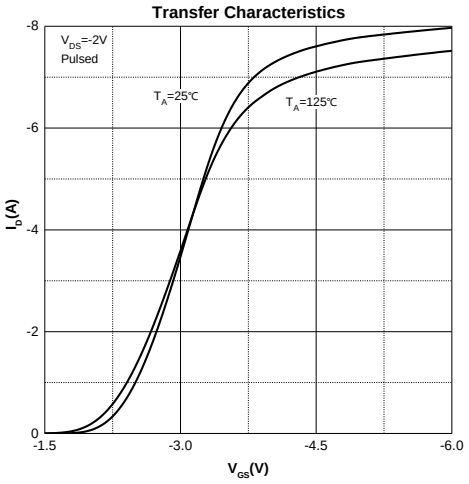


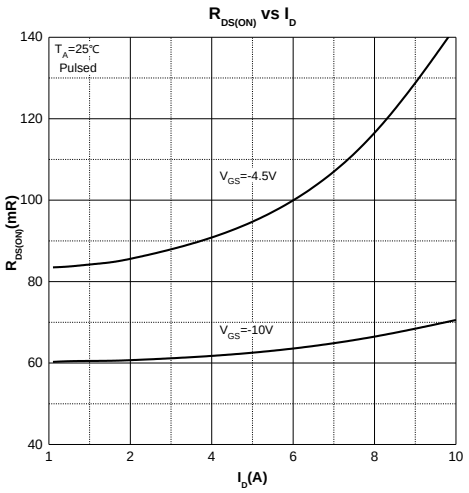


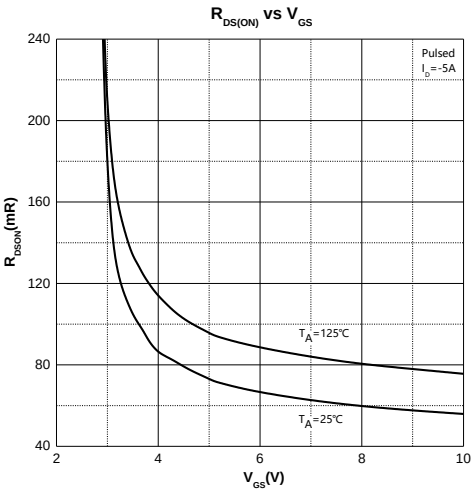
Typical Characteristics

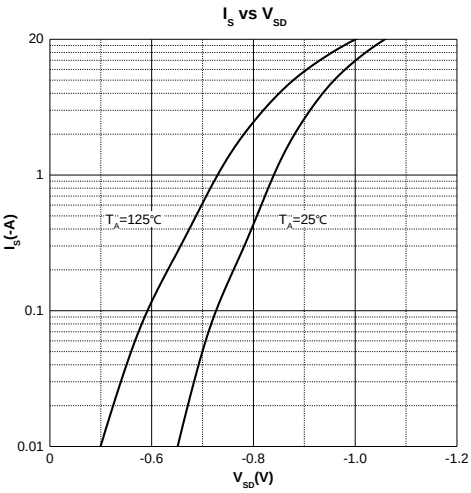
PMOS:

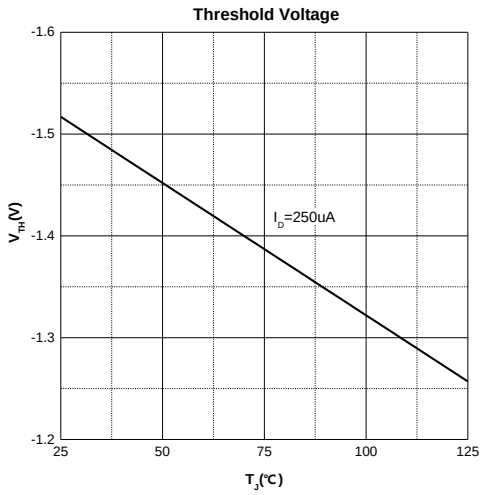




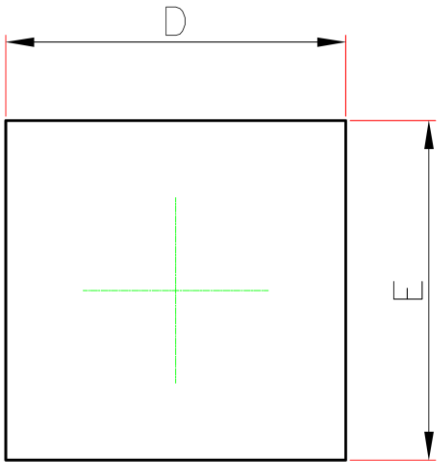




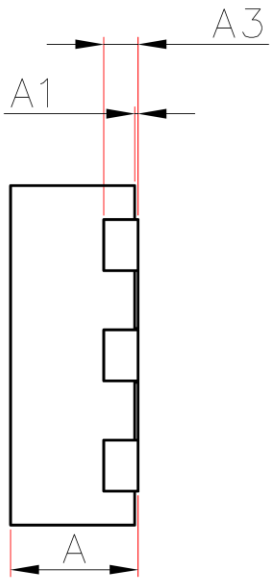




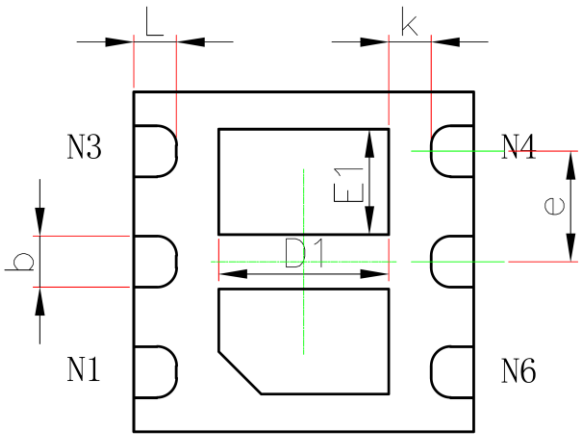
DFN2×2-6L Package Information



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0	0.050	0	0.002
A3	2.03REF		0.008REF	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
k	0.200MIN		0.008MIN	
b	0.250	0.350	0.010	0.014
e	0.65BSC		0.026TYP	
L	0.174	0.326	0.007	0.013