

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	5.8mΩ@-4.5V	-45A
	7.5mΩ@-2.5V	

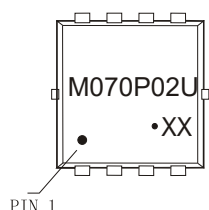
Feature

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

Application

- Load Switch
- Battery Protection

MARKING:

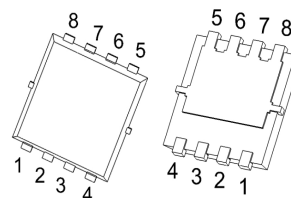


M070P02U = Device Code

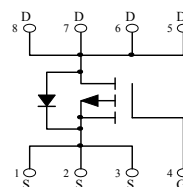
XX = Date Code

Solid Dot = Green Indicator

PDFN3.3×3.3-8L



Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-20	V
Gate - Source Voltage		V_{GS}	±12	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	-45	A
Pulsed Drain Current ²		I_{DM}	-180	A
Power Dissipation ⁴	$T_C = 25^\circ\text{C}$	P_D	83	W
Thermal Resistance from Junction to Ambient ⁵		$R_{\theta JA}$	55	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.5	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

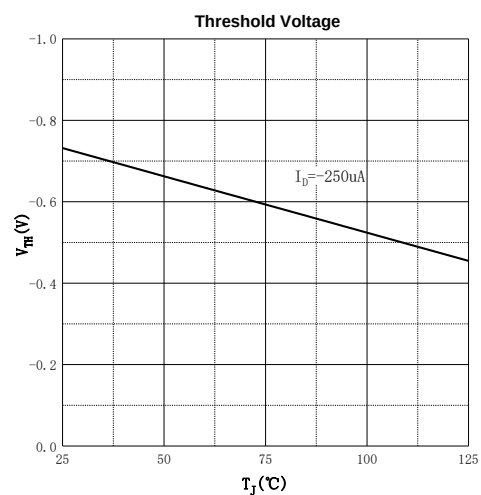
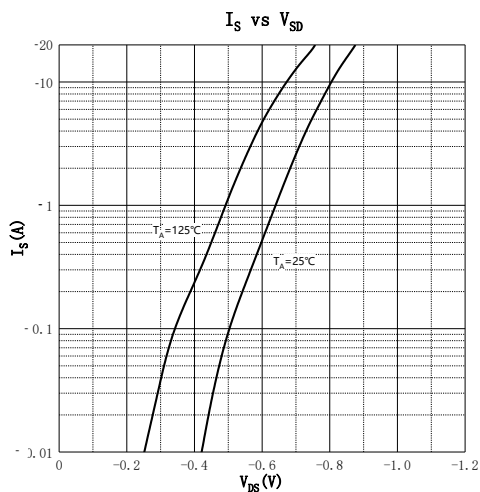
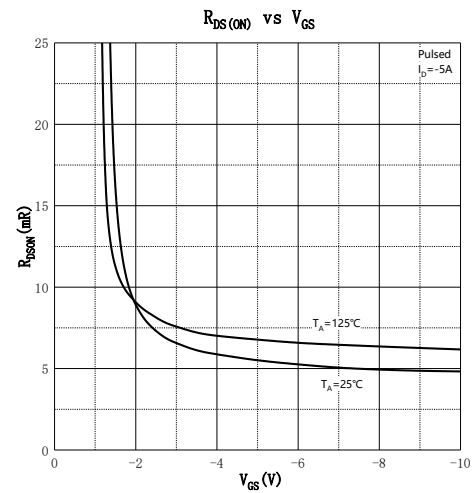
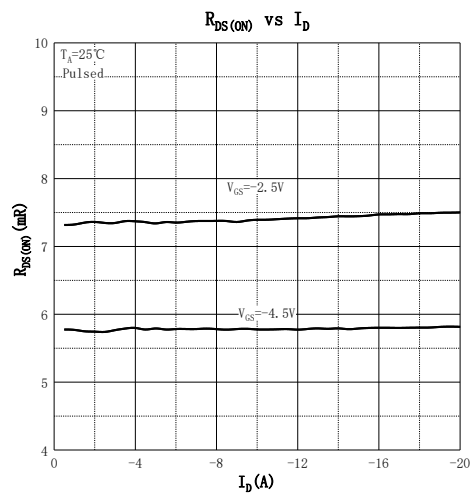
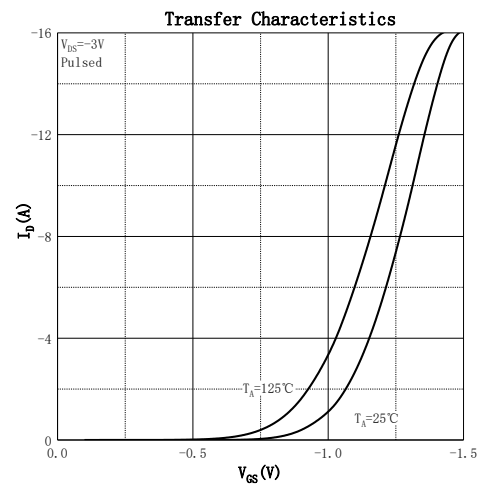
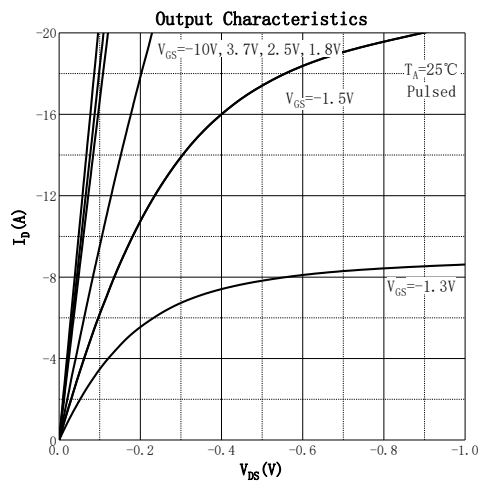
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.75	-1.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = 20A		5.8	7	mΩ
		V _{GS} = -2.5V, I _D = 20A		7.5	9	
Forward Transconductance	g _{FS}	V _{DS} = -5V, I _D = -20A	50			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		3600		pF
Output Capacitance	C _{oss}			560		
Reverse Transfer Capacitance	C _{rss}			440		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		3		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -20A		50		nC
Gate-source Charge	Q _{gs}			9		
Gate-drain Charge	Q _{gd}			14		
Turn-on Delay Time	t _{d(on)}	V _{DD} = -10V, V _{GS} = -4.5V, R _L = 3Ω R _G = 0.5Ω		16		ns
Turn-on Rise Time	t _r			40		
Turn-off Delay Ttime	t _{d(off)}			83		
Turn-off Fall Time	t _f			22		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = -20A			-1.2	V

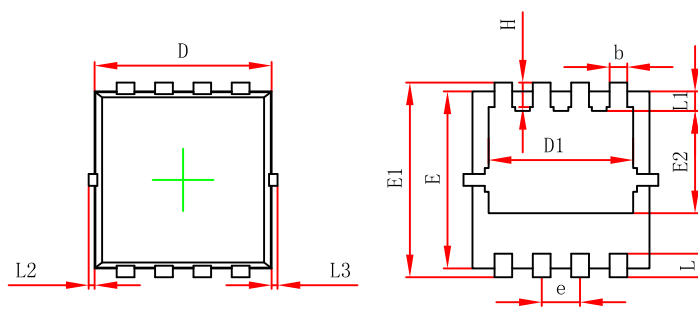
Notes :

- 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.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 5.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics

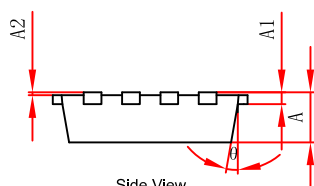


PDFN3.3×3.3-8L Package Information



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	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°