

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	5.5mΩ@10V	50A
	7.0mΩ@4.5V	

Feature

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

Application

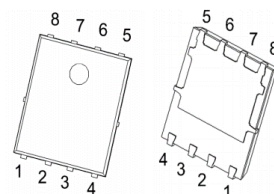
- Power Switching Application

MARKING:

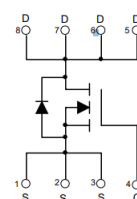


M070N04N = Device Code
 XX = Date Code
 Solid Dot = Green Indicator

PDFN5×6-8L



Schematic diagram



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

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	40	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	50	A
Continuous Drain Current ⁶	$T_A = 25^\circ\text{C}$	I_D	20	A
Pulsed Drain Current ²		I_{DM}	180	A
Single Pulsed Avalanche Current ³		I_{AS}	33	A
Single Pulsed Avalanche Energy ³		E_{AS}	280	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	41.6	W
Power Dissipation ⁶	$T_A = 25^\circ\text{C}$	P_D	2.5	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	55	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	3	$^\circ\text{C/W}$
Junction Temperature		T_J	-55~ +150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

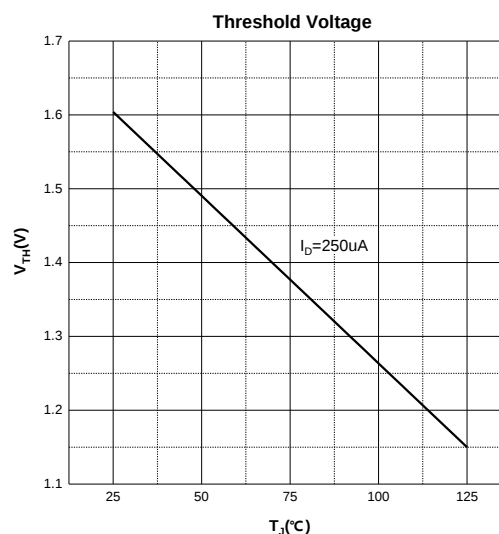
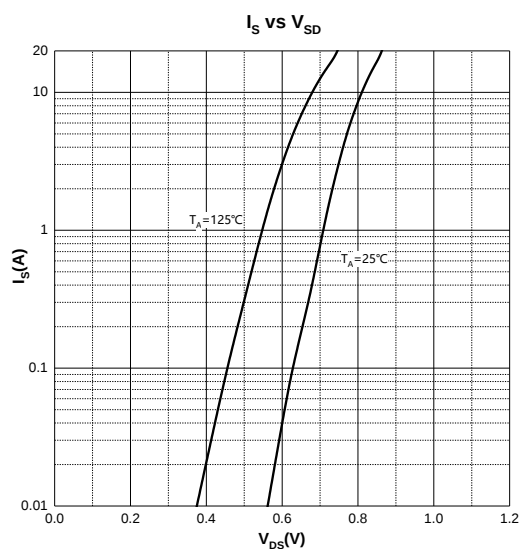
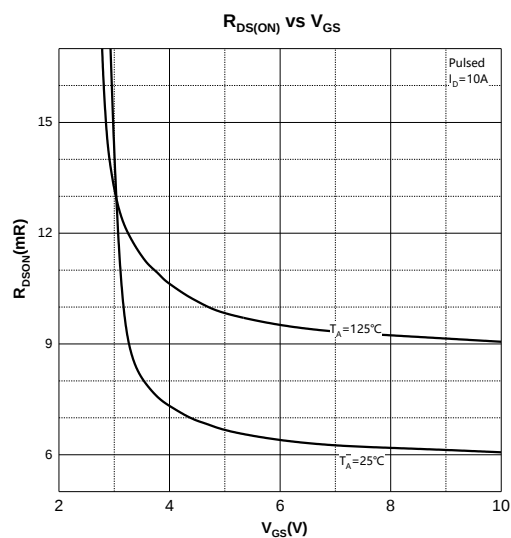
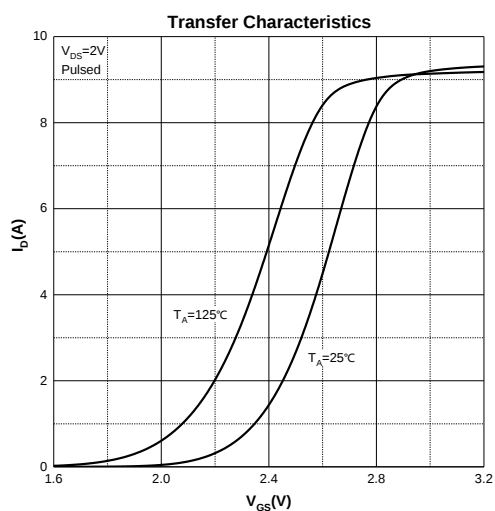
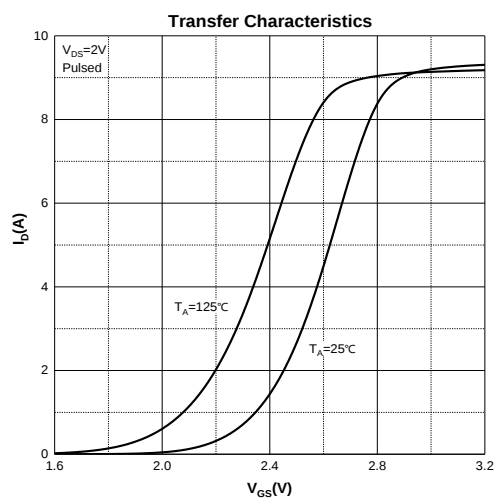
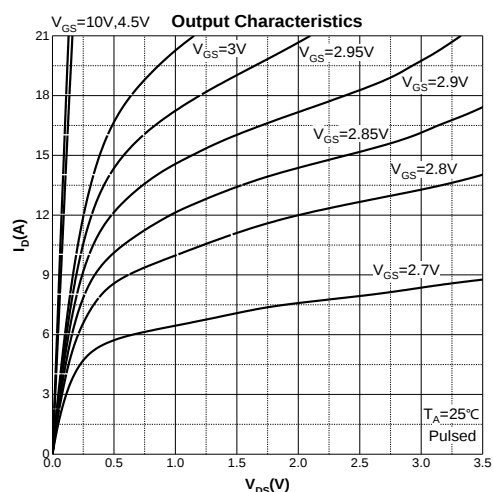
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

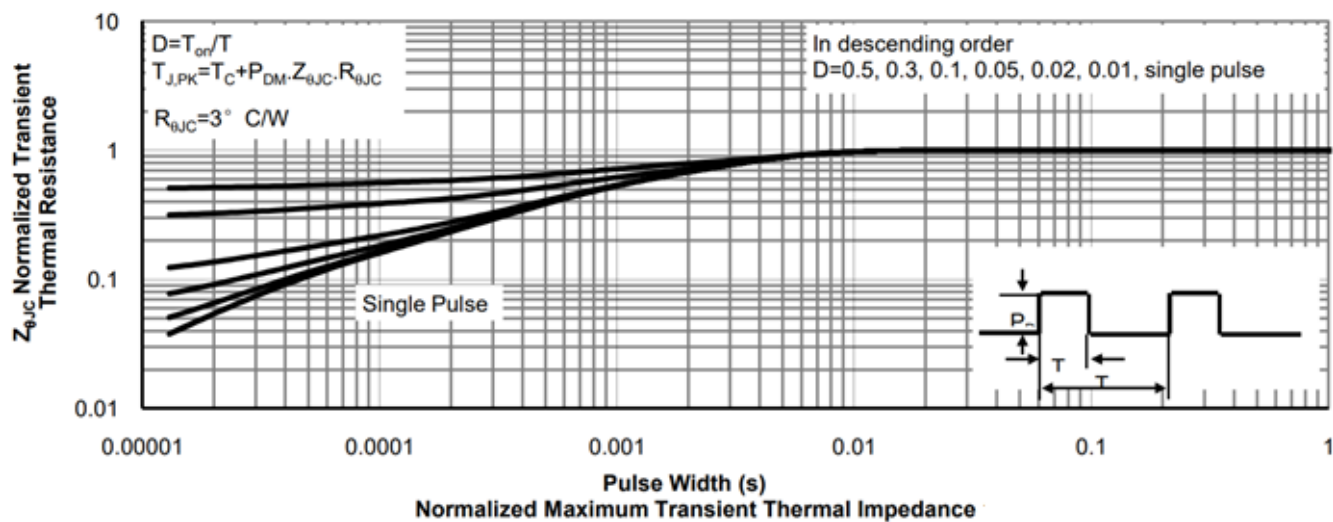
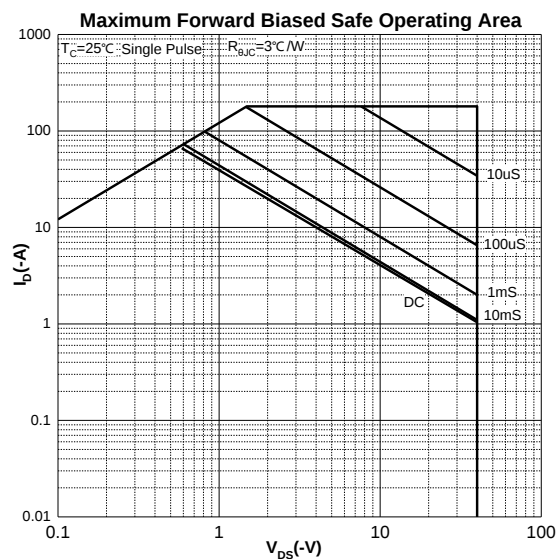
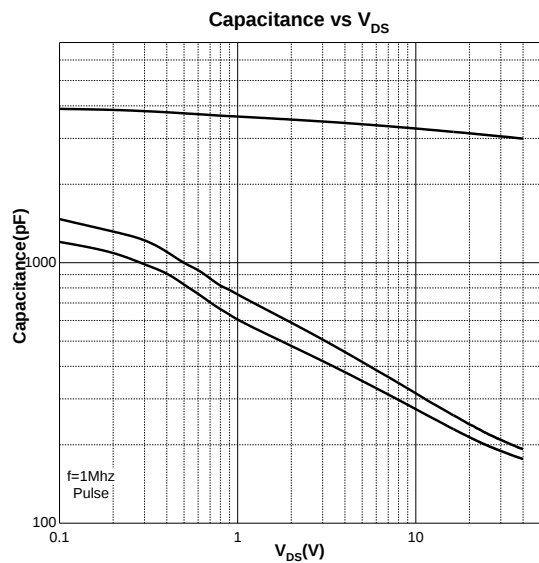
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.6	2.5	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		5.5	7.0	mΩ
		V _{GS} = 4.5V, I _D = 10A		7.0	10.5	
Forward Transconductance	g _{FS}	V _{DS} = 10V, I _D = 10A		12		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		3163	3796	pF
Output Capacitance	C _{oss}			240		
Reverse Transfer Capacitance	C _{rss}			214		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		1.59		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 25V, V _{GS} = 10V, I _D = 8A		20	26	nC
Gate-source Charge	Q _{gs}			9		
Gate-drain Charge	Q _{gd}			11		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V, R _L = 3Ω, R _G = 3Ω		15		ns
Turn-on Rise Time	t _r			5		
Turn-off Delay Ttime	t _{d(off)}			50		
Turn-off Fall Time	t _f			6		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 10A			1.2	V

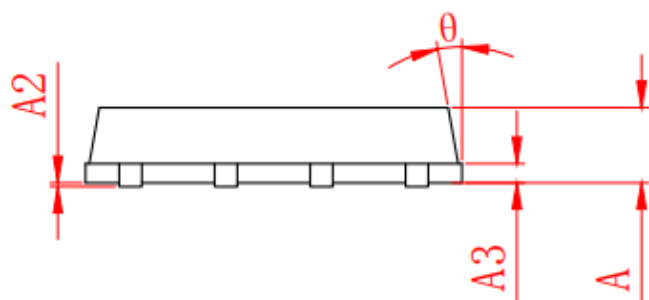
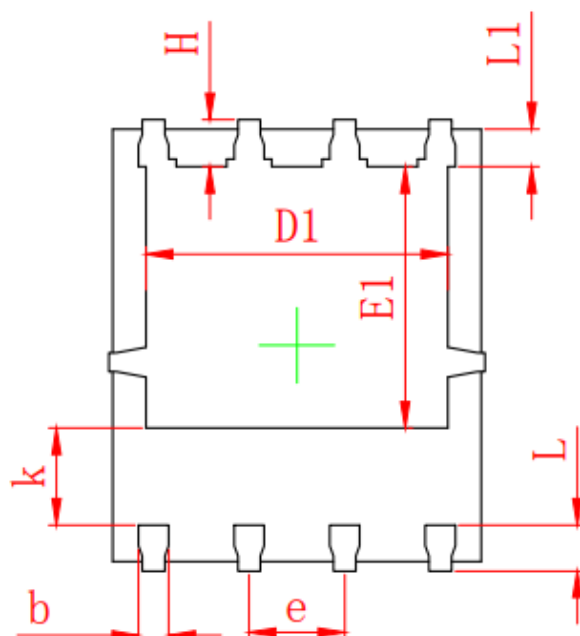
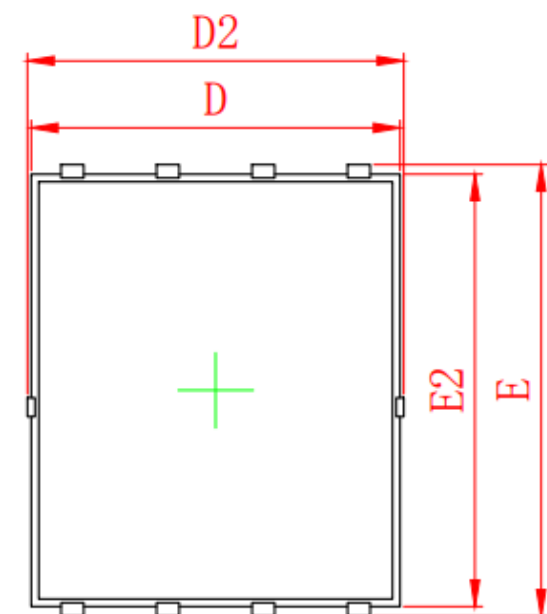
Notes :

- 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.EAS condition: V_{DD} = 25V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
- 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 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics





PDFN5×6-8L Package Information


SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.100
A1	0.254 REF.	
A2	0~0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270 TYP.	
L	0.534	0.686
L1	0.424	0.576
k	1.190	1.390
H	0.549	0.701
θ	8°	12°