

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	0.8m Ω @10V	150A
	1.4m Ω @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:

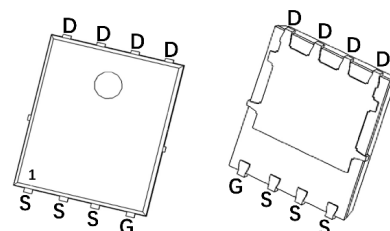


M014N03NU = Device

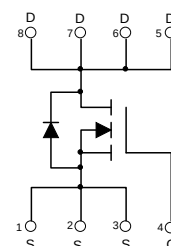
Code XX = Date Code

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}	30	V
Gate - Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	150	A
Pulsed Drain Current ²		I_{DM}	450	A
Single Pulsed Avalanche Current ³		I_{AS}	73	A
Single Pulsed Avalanche Energy ³		E_{AS}	1054	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	208	W
Power Dissipation ⁶	$T_A = 25^\circ\text{C}$	P_D	2.5	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	0.6	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

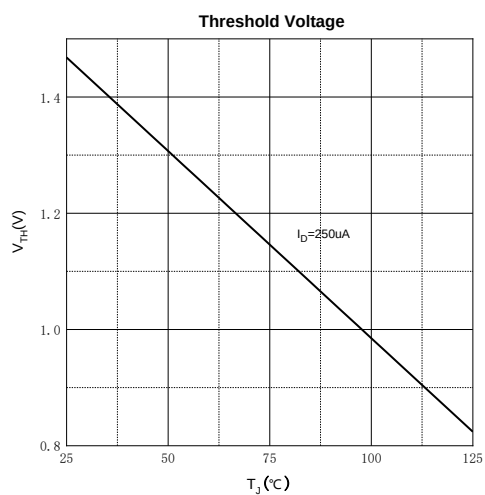
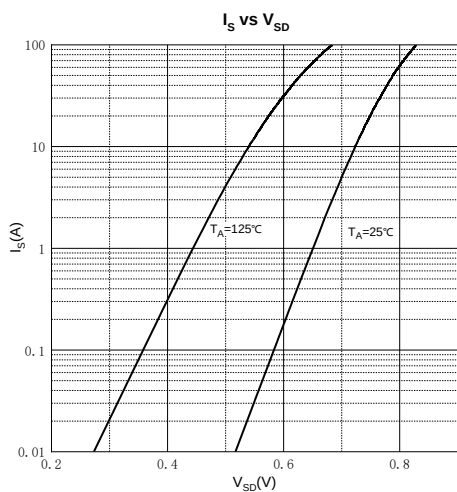
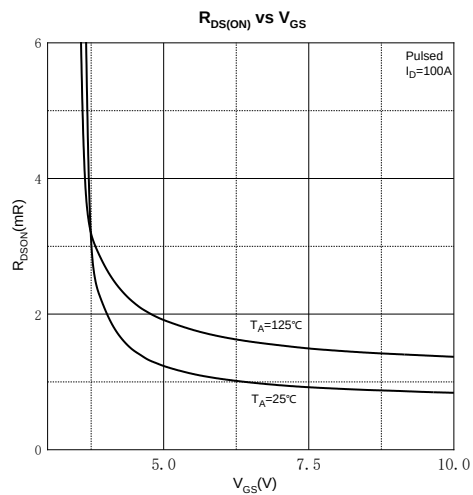
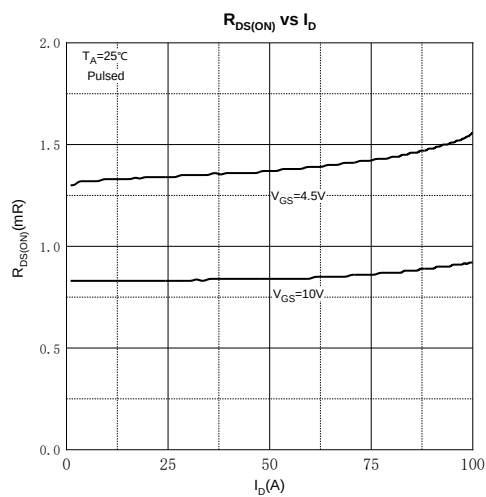
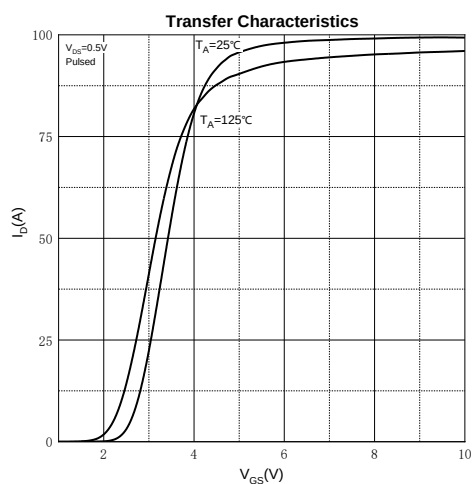
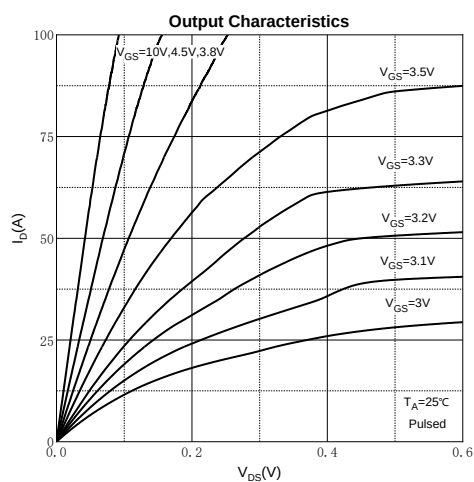
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

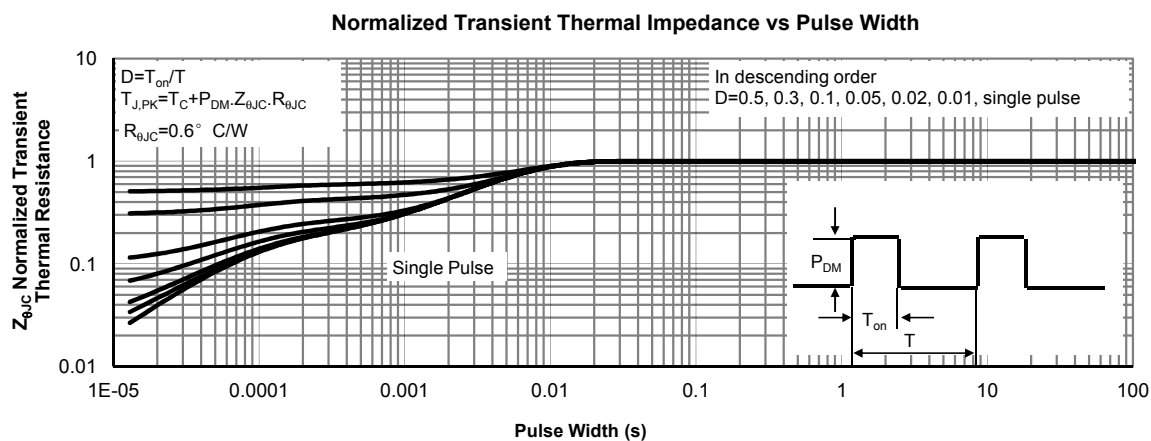
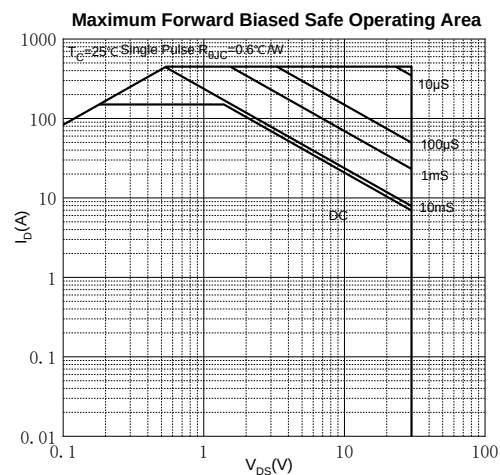
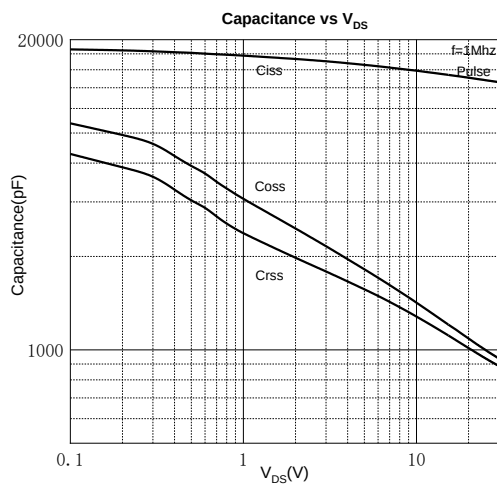
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	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 = 30A		0.8	1.4	mΩ
		V _{GS} = 4.5V, I _D = 10A		1.4	2.0	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 20A		100		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		7486		pF
Output Capacitance	C _{oss}			1215		
Reverse Transfer Capacitance	C _{rss}			1114		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		1.7		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 30A		145.7		nC
Gate-source Charge	Q _{gs}			22.8		
Gate-drain Charge	Q _{gd}			28.0		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 22.5V, V _{GS} = 10V, R _L = 1.125Ω,R _G = 3Ω		16		ns
Turn-on Rise Time	t _r			6		
Turn-off Delay Ttime	t _{d(off)}			75		
Turn-off Fall Time	t _f			6.5		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 10A			1.2	V

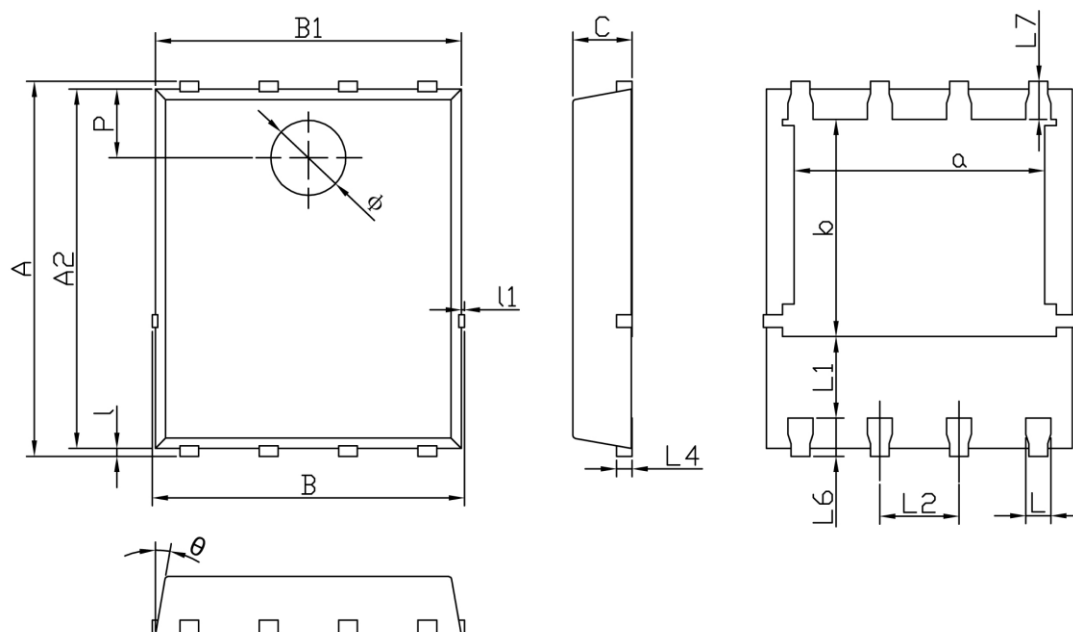
Notes :

- 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	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.900	6.100	0.232	0.240
a	3.910	4.110	0.154	0.162
A2	5.700	5.800	0.224	0.228
B	4.900	5.100	0.193	0.201
b	3.370	3.570	0.133	0.141
B1	4.800	5.000	0.189	0.197
C	0.900	1.000	0.035	0.039
L	0.350	0.450	0.014	0.018
l	0.060	0.200	0.002	0.008
L1	1.100	-	0.043	-
l1	-	0.100	-	0.004
L2	1.170	1.370	0.046	0.054
L4	0.210	0.340	0.008	0.013
L6	0.510	0.710	0.020	0.028
L7	0.510	0.710	0.020	0.028
P	1.000	1.200	0.039	0.047
Φ	1.100	1.300	0.043	0.051
θ	8°	12°	8°	12°