



### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	2.5mΩ@10V	100A
	3.5mΩ@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:

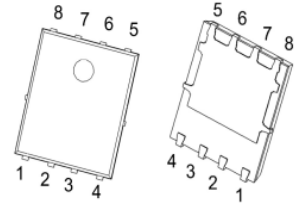


M033N04L = Device Code  
XX = Date Code  
Solid Dot = Green Indicator

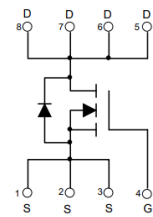
### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain - Source Voltage	$V_{DS}$	40	V	
Gate - Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current <sup>1</sup>	$T_C = 25^\circ\text{C}$	$I_D$	100	A
	$T_C = 100^\circ\text{C}$	$I_D$	85	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	340	A	
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	43	A	
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	462	mJ	
Power Dissipation <sup>5</sup>	$T_C = 25^\circ\text{C}$	$P_D$	56	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.2	$^\circ\text{C/W}$	
Junction Temperature	$T_J$	150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$	

### PDFN5×6-8L



### Schematic diagram



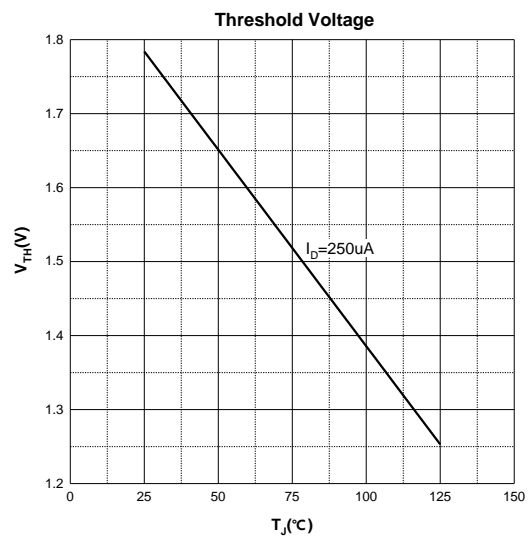
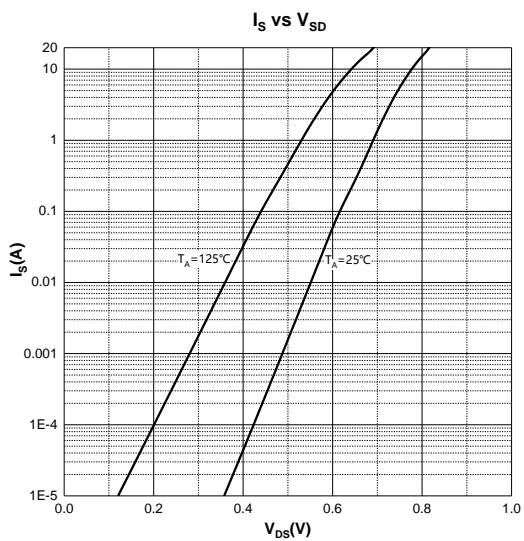
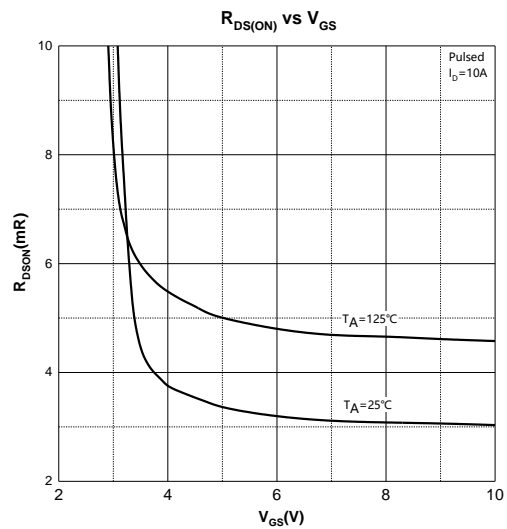
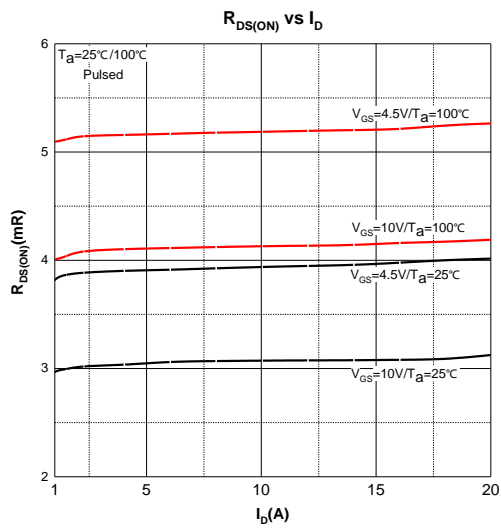
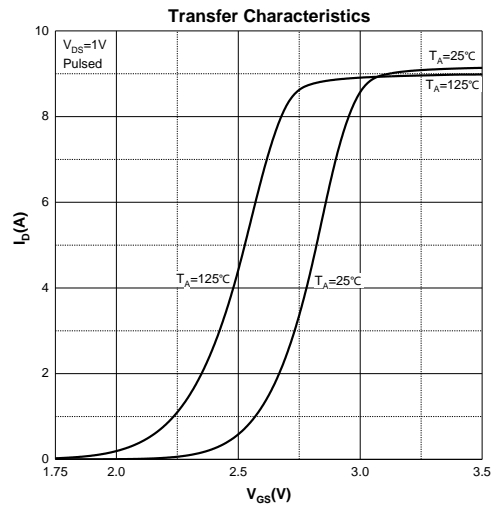
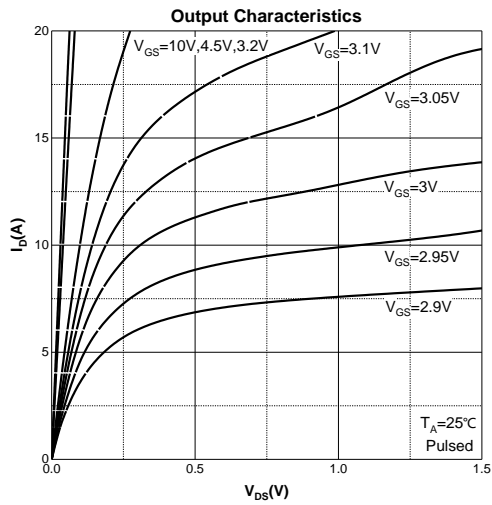
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

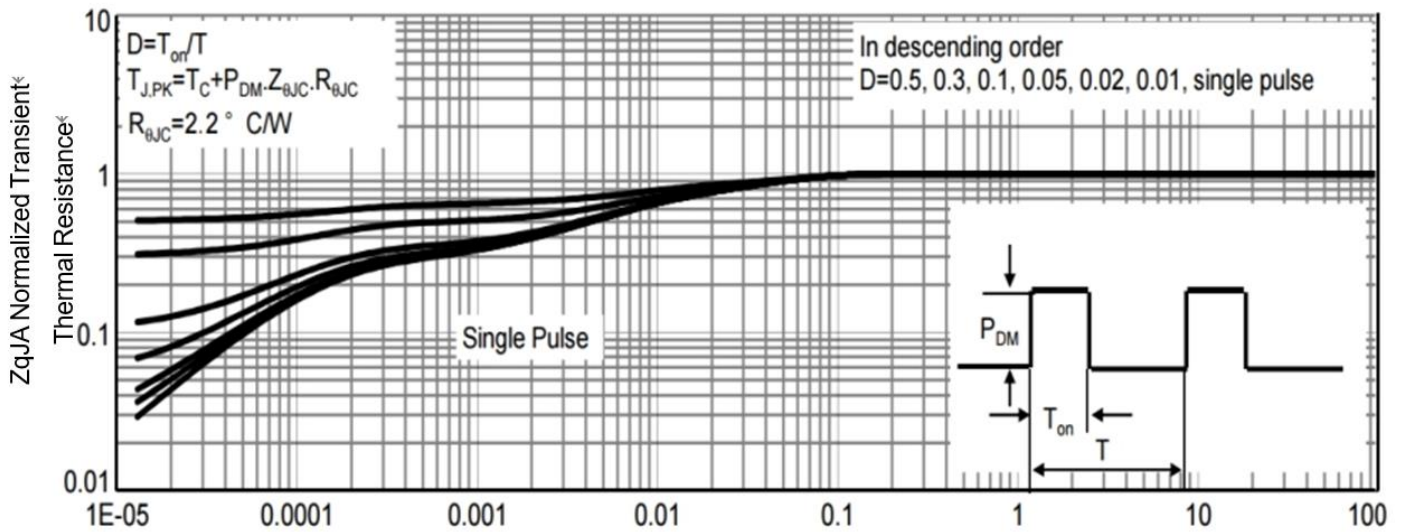
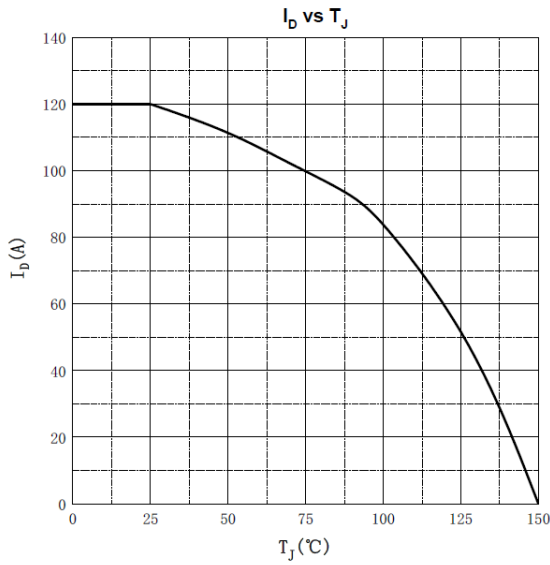
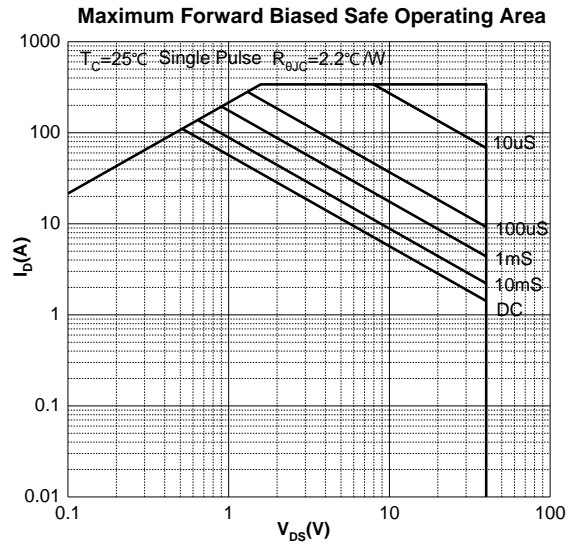
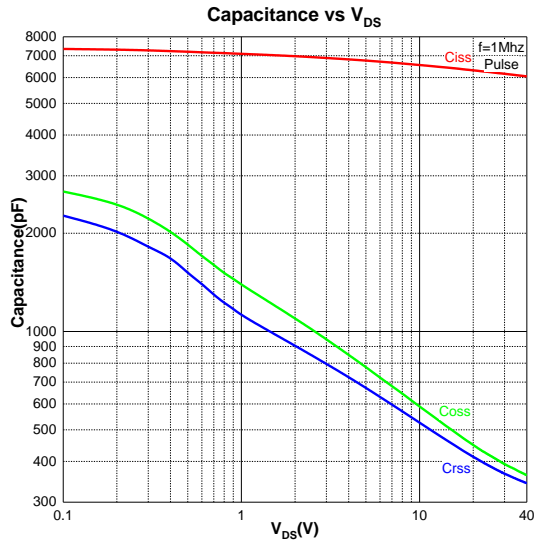
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 32V, V_{GS} = 0V$			1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	3.0	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		2.5	3.3	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		3.5	5.3	
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		6573		pF
Output Capacitance	$C_{oss}$			451		
Reverse Transfer Capacitance	$C_{rss}$			411		
Gate Resistance	$R_g$	$V_{GS} = 0V, f = 1MHz$		0.94		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 20V, V_{GS} = 10V, I_D = 30A$		26.1		nC
Gate-source Charge	$Q_{gs}$			4.4		
Gate-drain Charge	$Q_{gd}$			8.8		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, I_D = 15A, R_G = 3.3\Omega, V_{GS} = 10V$		10.3		ns
Turn-on Rise Time	$t_r$			5.3		
Turn-off Delay Time	$t_{d(off)}$			44		
Turn-off Fall Time	$t_f$			9.2		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 10A$			1.2	V

### Notes :

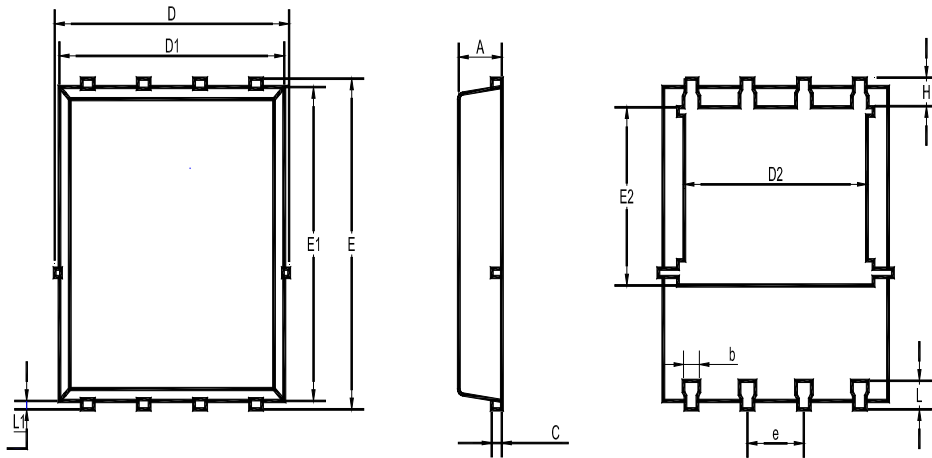
- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = 25V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 5.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ\text{C}$ .And device mounted on a large heatsink

## Typical Characteristics





## PDFN5×6-8L Package Information



UNIT		b	C	D	D1	D2	E	E1	E2	e	L	L1	H
mm	1.0	0.45	0.34	5.1	5.0	4.11	6.1	5.8	3.57	1.37	0.71	0.2	0.71
	0.9	0.35	0.21	4.9	4.8	3.91	5.9	5.7	3.37	1.17	0.51	0.06	0.51