



#### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	3.0m $\Omega$ @10V	120A
	4.0m $\Omega$ @4.5V	

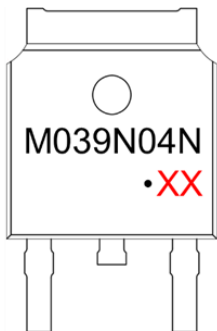
#### Feature

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

#### Application

- Power Switching Application

#### MARKING:

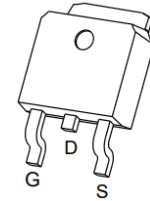


M039N04N = Device Code

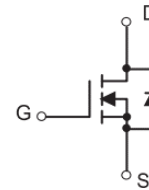
XX = Date Code

Solid Dot = Green Indicator

#### TO-252-2L



#### 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	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	120	A
	$T_C = 25^\circ\text{C}$		
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>	$P_D$	56	W
	$T_C = 25^\circ\text{C}$		
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.2	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

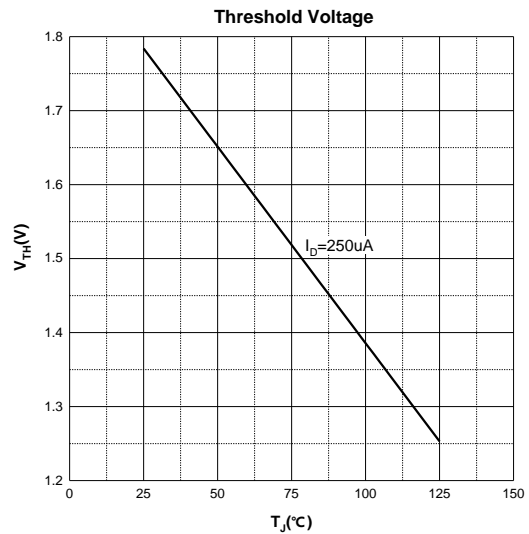
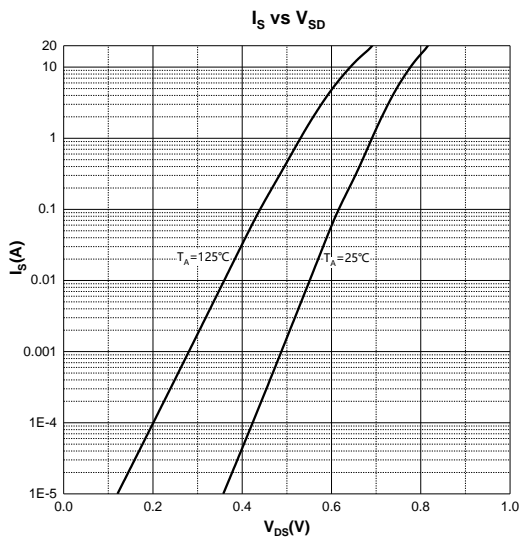
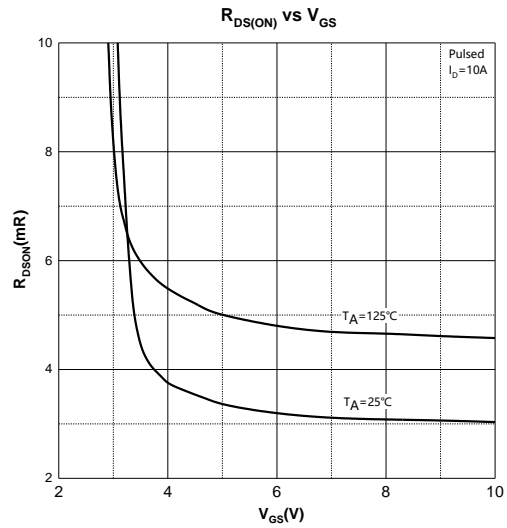
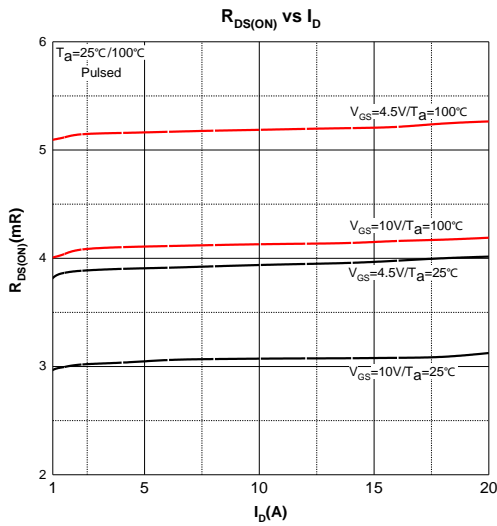
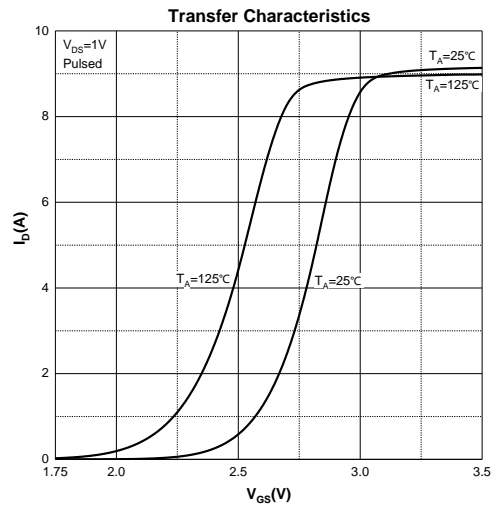
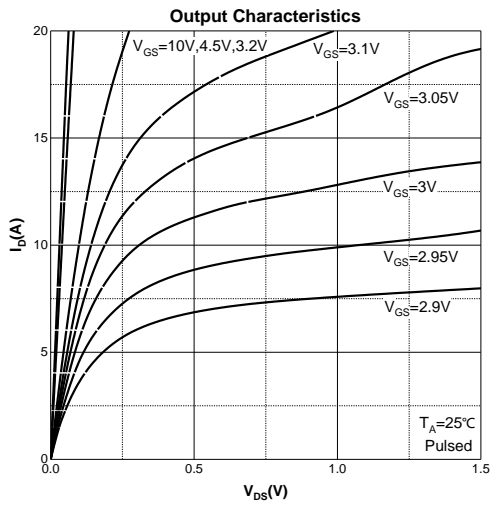
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

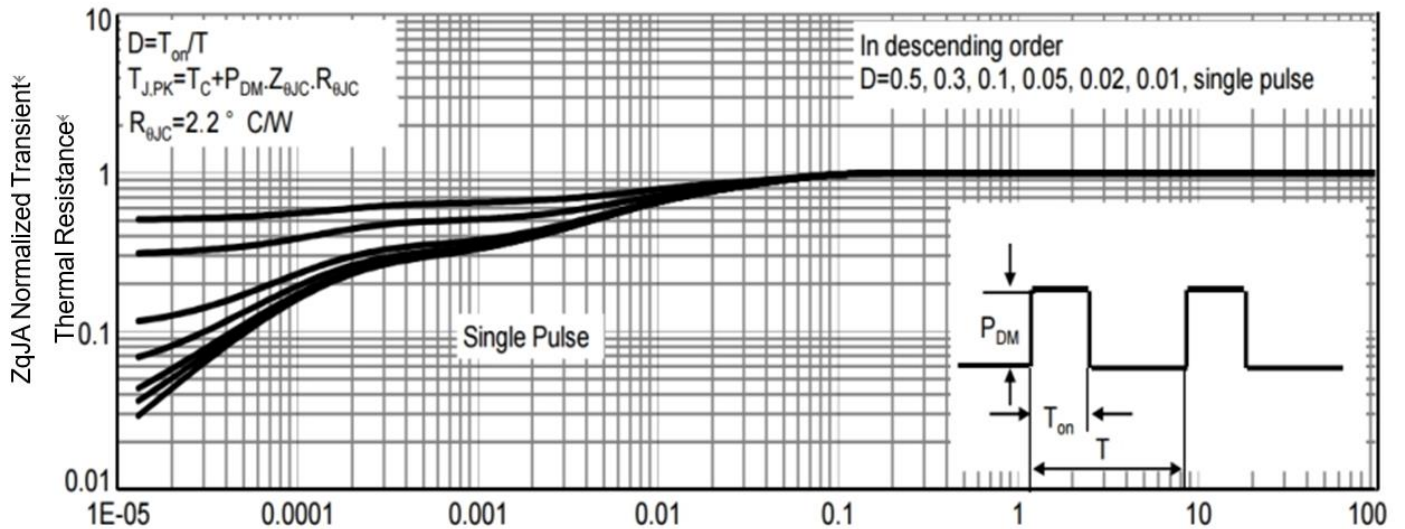
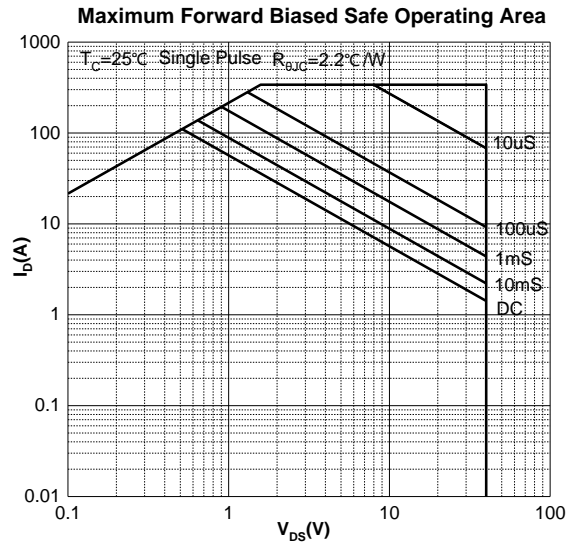
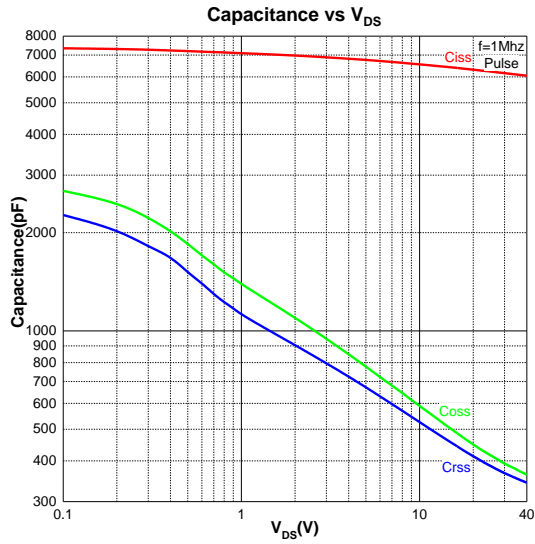
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 32V, V_{GS} = 0V$			1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	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	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		3.0	3.9	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		4.0	6.0	
<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 :

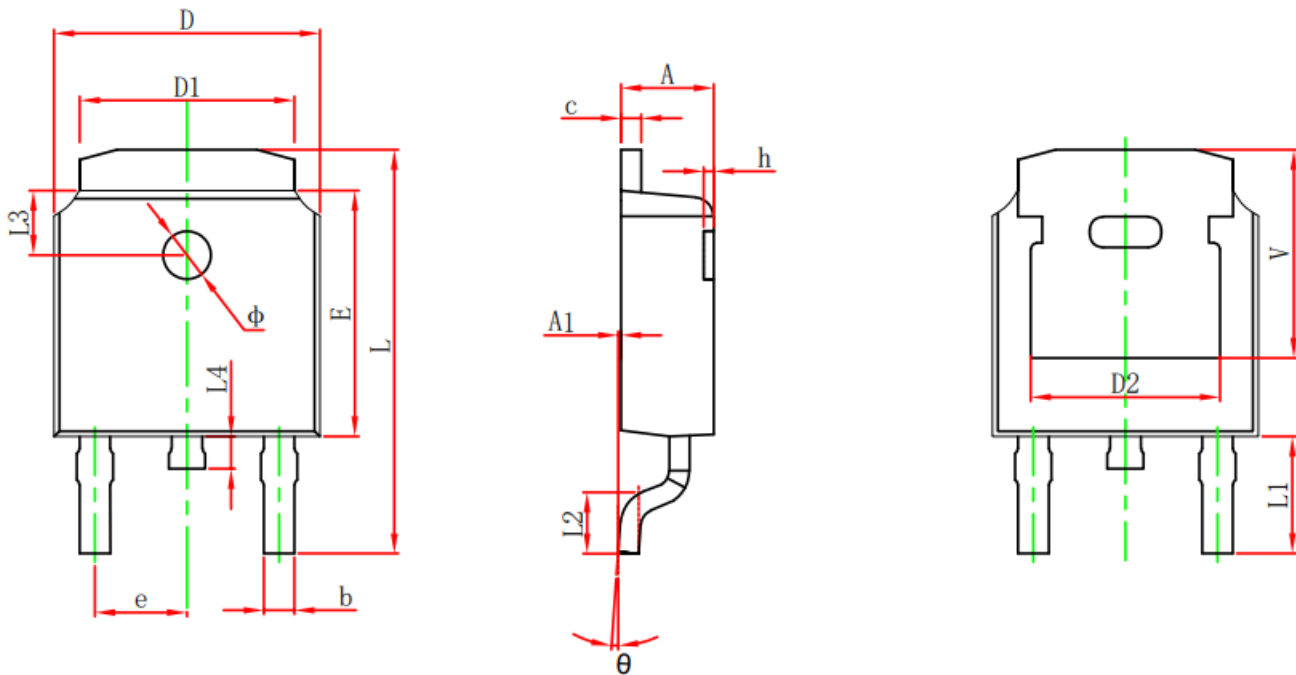
- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = 25V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse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





## TO-252-2L Package Information



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

单击下面可查看定价，库存，交付和生命周期等信息

[>>GP\(格瑞宝\)](#)