

## SOP8 Plastic-Encapsulate MOSFET

### 40V N-Channel MOSFET

#### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	10.5mΩ@10V	10A
	11.5mΩ@4.5V	

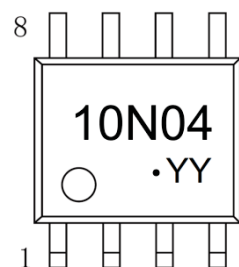
#### Feature

- High Power and current handing capability
- Load switch
- High density cell design for ultra low  $R_{DS(ON)}$
- Lead free product is acquired

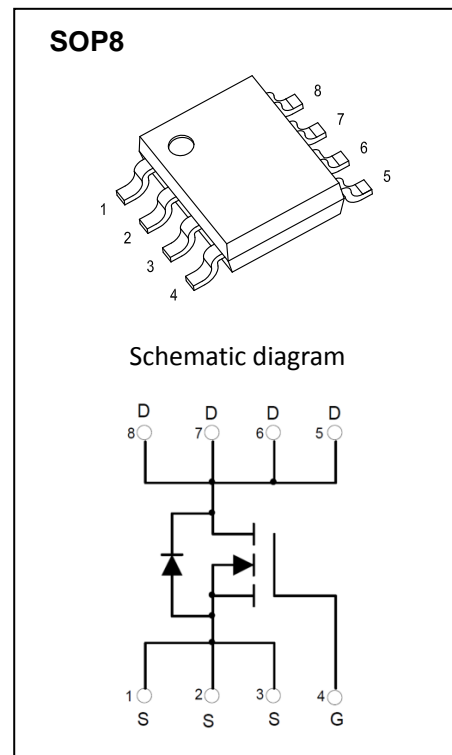
#### Application

- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply
- Power management

#### MARKING:



10N04= Device code  
 Solid dot=Pin1 indicator  
 Solid dot = Green molding compound device,  
 if none, the normal device  
 YY=Date Code



#### ABSOLUTE MAXIMUM RATINGS ( $T_C=25^\circ\text{C}$ 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	$I_D$	10	A
Pulsed Drain Current	$I_{DM}$	25	A
Single Pulse Avalanche Energy	$E_{AS}^{(1)}$	102	mJ
Power Dissipation	$P_D$	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

(1). $E_{AS}$  condition:  $V_{DD}=15V, L=0.1mH, R_G=25\Omega$ , Starting  $T_J = 25^\circ\text{C}$

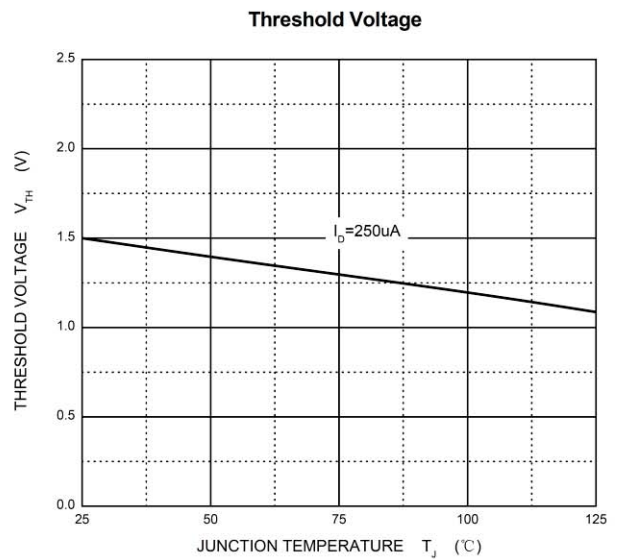
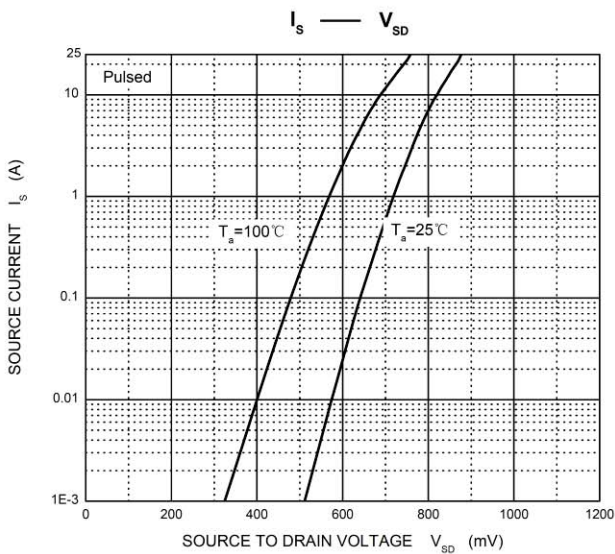
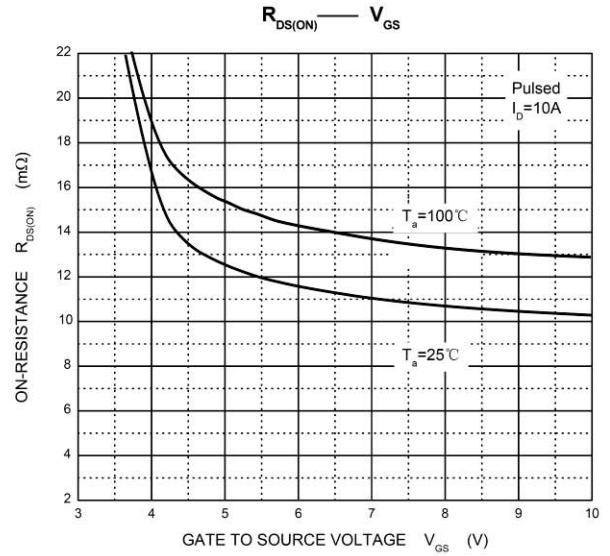
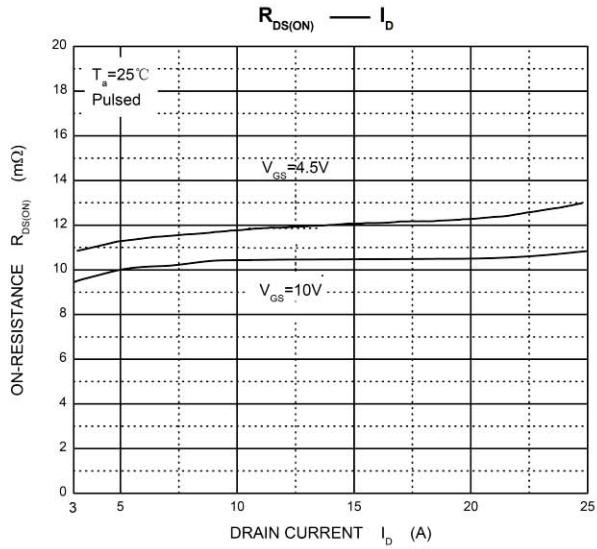
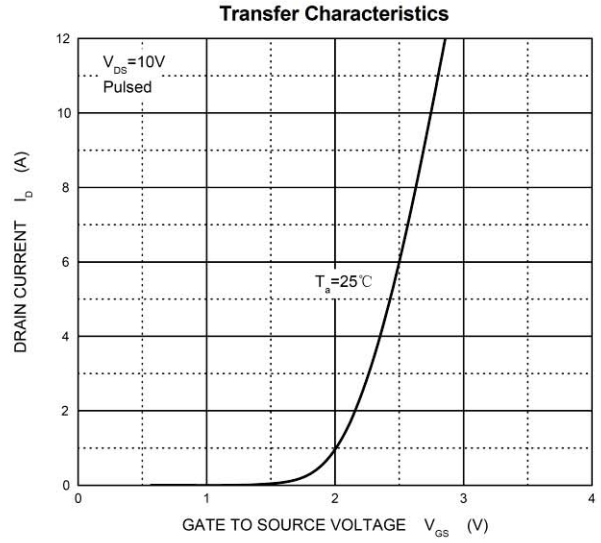
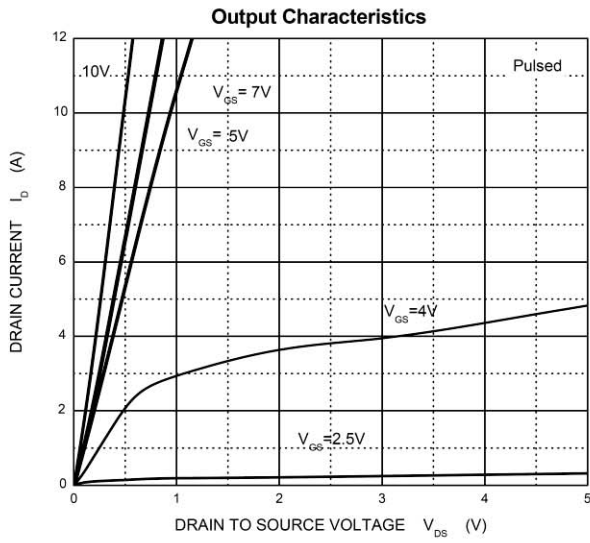
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 40V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage <sup>1</sup>	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-source on-resistance <sup>1</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$		10.5	13	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		11.5	17	
Forward transconductance <sup>1</sup>	$g_{FS}$	$V_{DS} = 5V, I_D = 10A$	10	22		S
<b>Dynamic characteristics<sup>2</sup></b>						
Input capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		1875		pF
Output capacitance	$C_{oss}$			150		
Reverse transfer capacitance	$C_{rss}$			118		
<b>Switching Characteristics<sup>2</sup></b>						
Total gate charge	$Q_g$	$V_{DS} = 20V, V_{GS} = 5V, I_D = 10A$		44.5		nC
Gate-source charge	$Q_{gs}$			5.8		
Gate-drain charge	$Q_{gd}$			11.9		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 25V, V_{GS} = 10V, R_G = 3\Omega, I_D = 14A$		11.9		ns
Turn-on rise time	$t_r$			34.8		
Turn-off delay time	$t_{d(off)}$			47.6		
Turn-off fall time	$t_f$			11.5		
<b>Diode Characteristics</b>						
Continuous Source Current	$I_S$	$V_G = V_D = 0V, \text{ Force Current}$			10	A
Pulsed Source Current	$I_{SM}$				25	
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 10A, T_J = 25^\circ\text{C}$		0.82	1.2	V

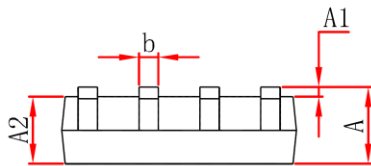
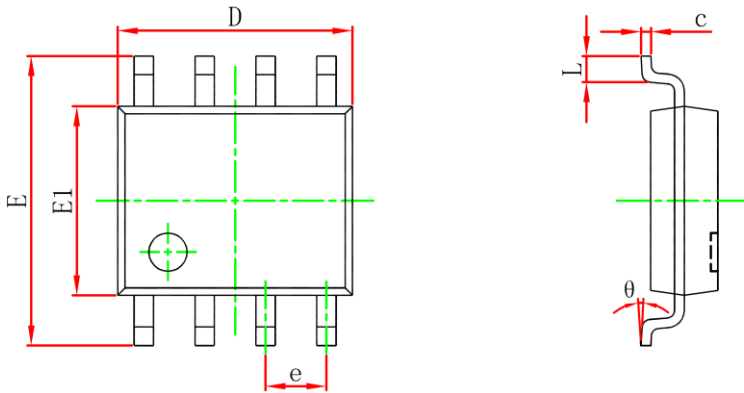
Notes:

1. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

# Typical Characteristics



## SOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

### NOTICE

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