
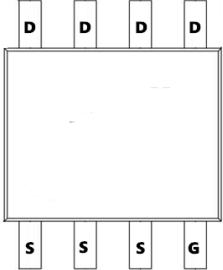


**TMN6018S**

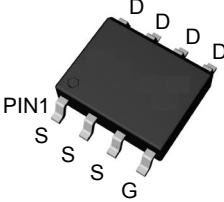
**N-Channel Enhancement Mosfet**

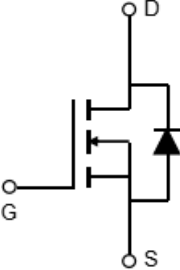
<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low <math>R_{DS(ON)}</math></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p><math>V_{DS} = 60V</math> <math>I_D = 18A</math></p> <p><math>R_{DS(ON)} = 13 m\Omega</math> (typ.) @ <math>V_{GS} = 10V</math></p> <p>100% UIS Tested 100% <math>R_g</math> Tested</p> 
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PIN1  
Marking: 18N06

S:SOP-8L





**Absolute Maximum Ratings:** ( $T_A=25^\circ C$  unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_A=25^\circ C$	18	A
	Continuous Drain Current- $T_A=100^\circ C$	5.6	
$I_{DM}$	Drain Current-Pulsed <sup>1</sup>	32	A
$P_D$	Power Dissipation	2.1	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

**Thermal Characteristics:**

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	60	$^\circ C/W$

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N-Channel Enhancement Mosfet

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	60	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V, T_C=25^\circ\text{C}$	---	---	1	$\mu A$
		$V_{GS}=0V, V_{DS}=60V, T_C=125^\circ\text{C}$	---	---	100	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu A$	1.2	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>2</sup>	$V_{GS}=10V, I_D=8A$	---	13	17	m $\Omega$
		$V_{GS}=4.5V, I_D=4A$	---	18	22	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance <sup>4</sup>	$V_{DS}=30V, V_{GS}=0V, f=1\text{MHz}$	---	1888	---	pF
$C_{oss}$	Output Capacitance <sup>4</sup>		---	112	---	
$C_{rss}$	Reverse Transfer Capacitance <sup>4</sup>		---	91	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time <sup>2,3</sup>	$V_{DD}=30V, I_D=20A$ $R_G=3\ \Omega, V_{GS}=10V$	---	6.7	---	ns
$t_r$	Rise Time <sup>2,3</sup>		---	3.3	---	ns
$t_{d(off)}$	Turn-Off Delay Time <sup>2,3</sup>		---	21	---	ns
$t_f$	Fall Time <sup>2,3</sup>		---	6.2	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V,$ $I_D=20A$	---	39	---	nC
$Q_{gs}$	Gate-Source Charge		---	7.7	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	8.3	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>3</sup>	$V_{GS}=0V, I_S=20A, T_J=25^\circ\text{C}$	---	---	1.2	V
$I_S$	Source drain current(Body Diode)	$V_D=V_G=0V$	---	---	18	A
$T_{rr}$	Reverse Recovery Time	$I_F=20A, di_F/dt=100A/\mu s$	---	29	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	21	---	nC

Notes :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production



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

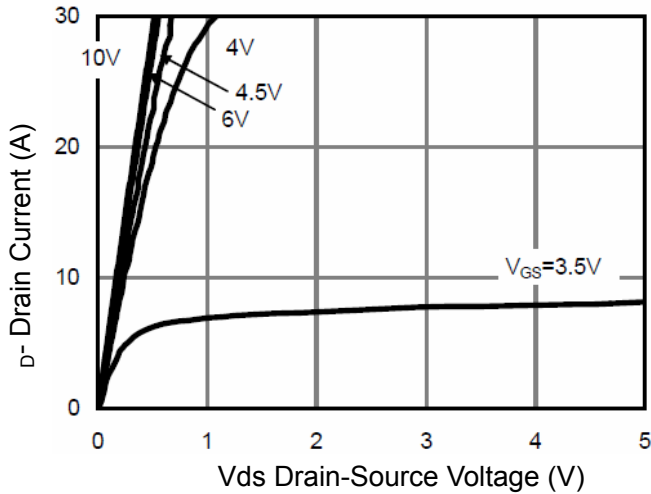


Figure 1 Output Characteristics

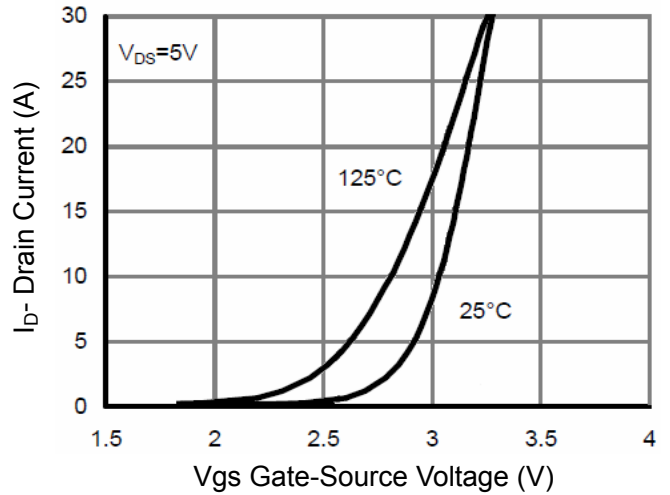


Figure 2 Transfer Characteristics

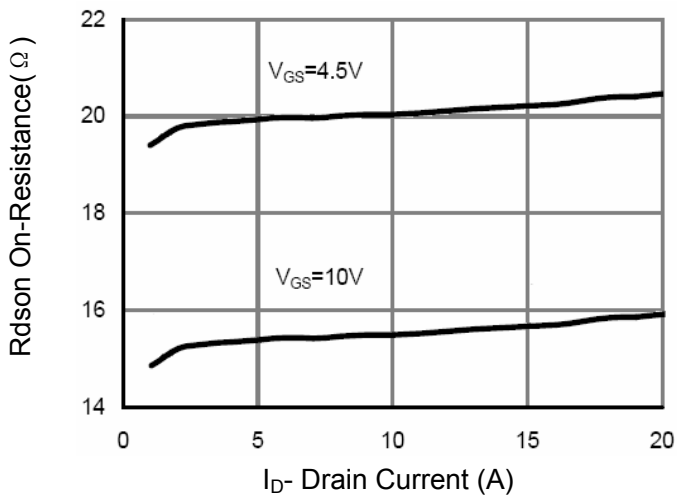


Figure 3 Rdson- Drain Current

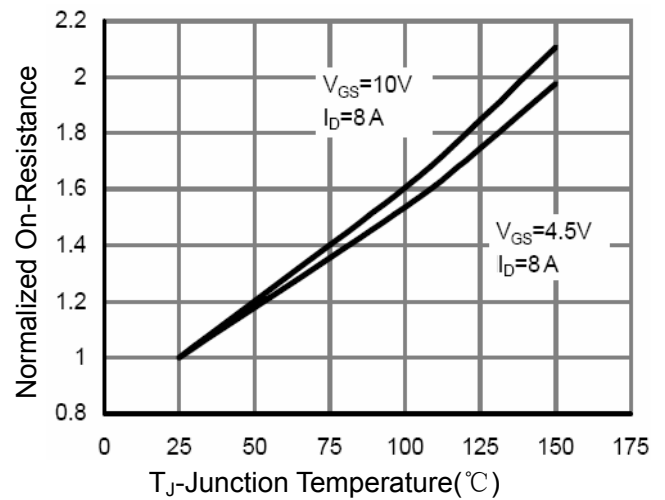


Figure 4 Rdson-Junction Temperature

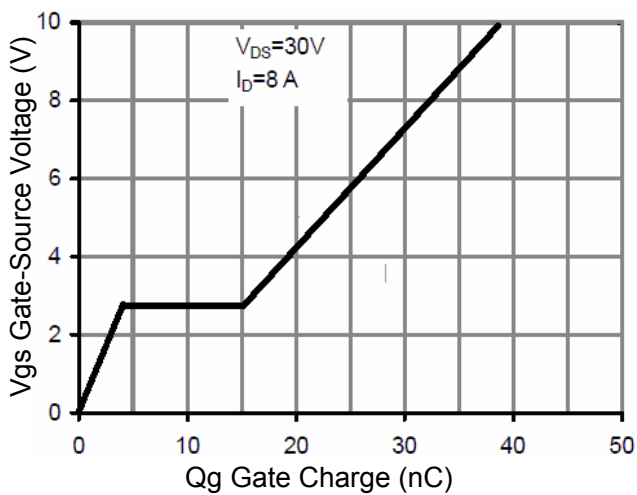


Figure 5 Gate Charge

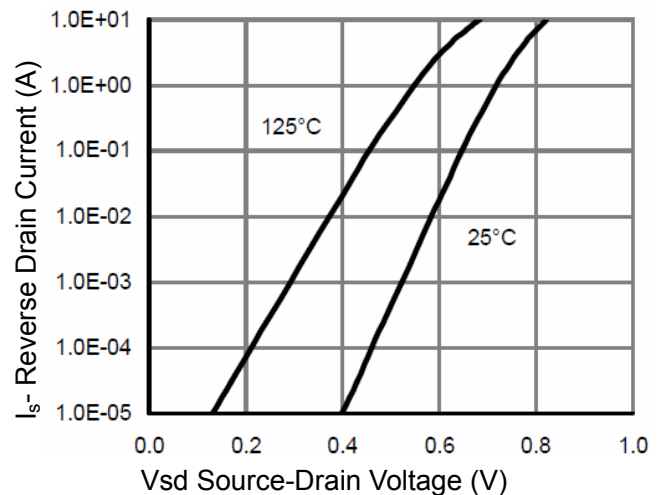


Figure 6 Source- Drain Diode Forward

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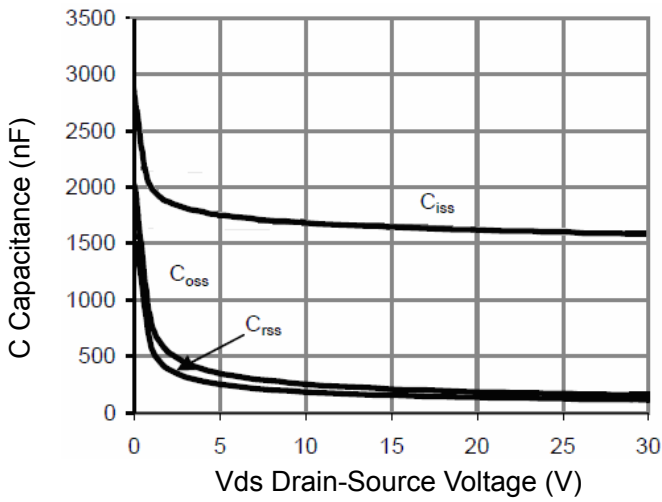


Figure 7 Capacitance vs Vds

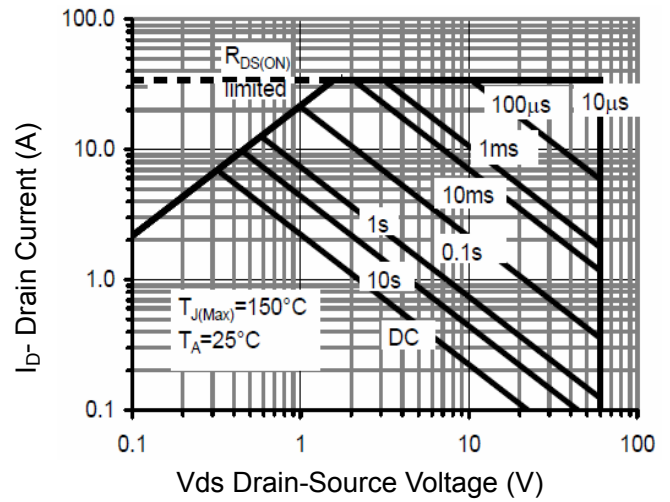


Figure 8 Safe Operation Area

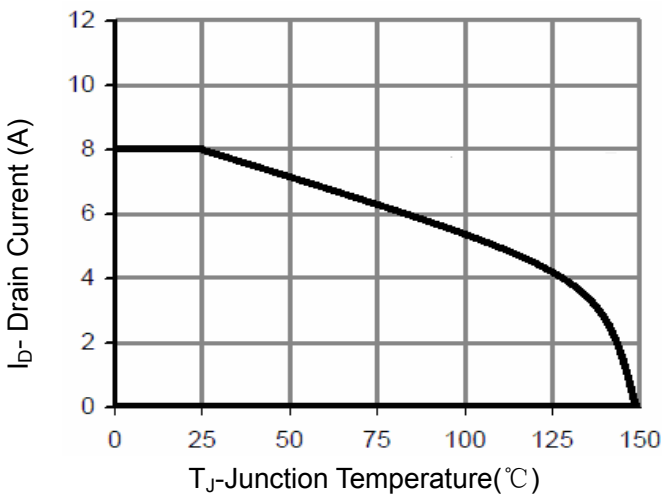


Figure 9 Current De-rating

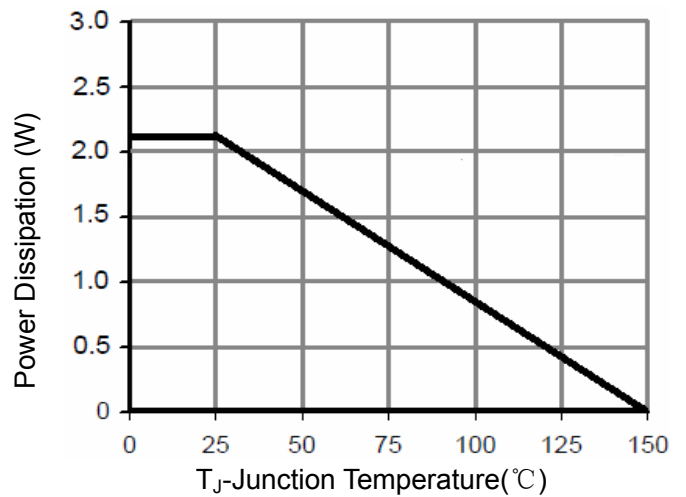


Figure 10 Power De-rating

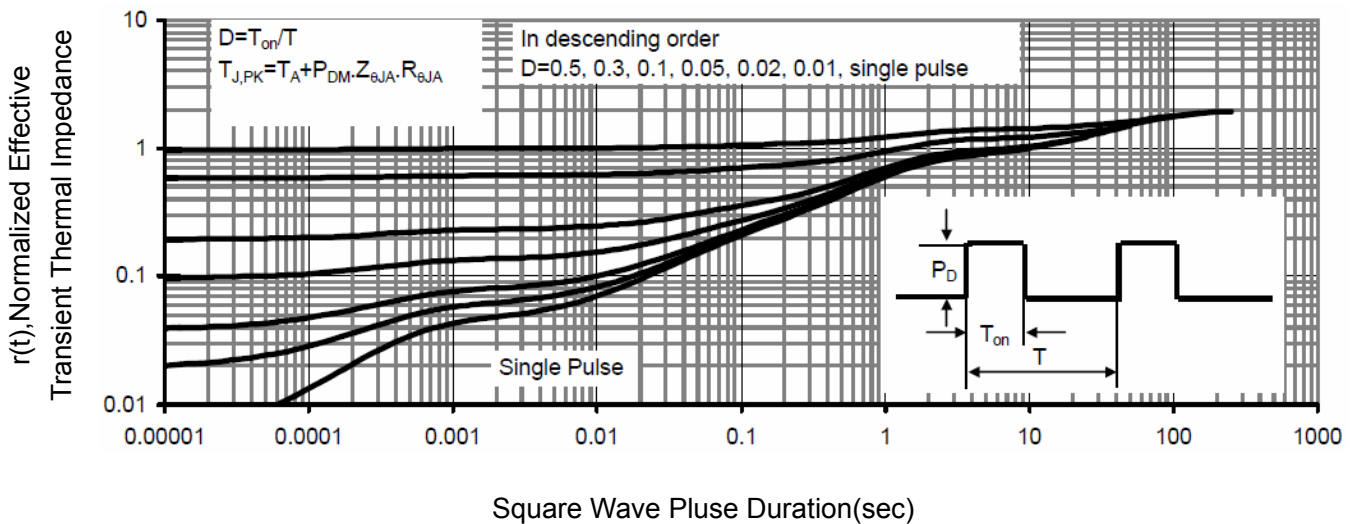
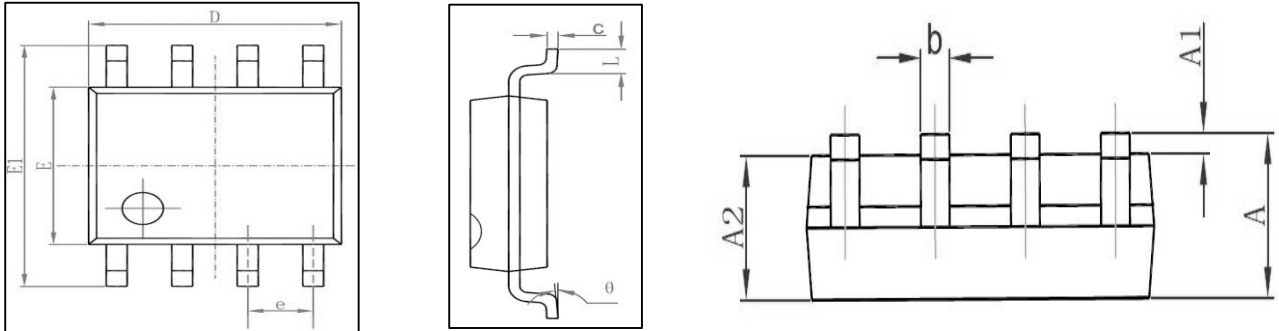
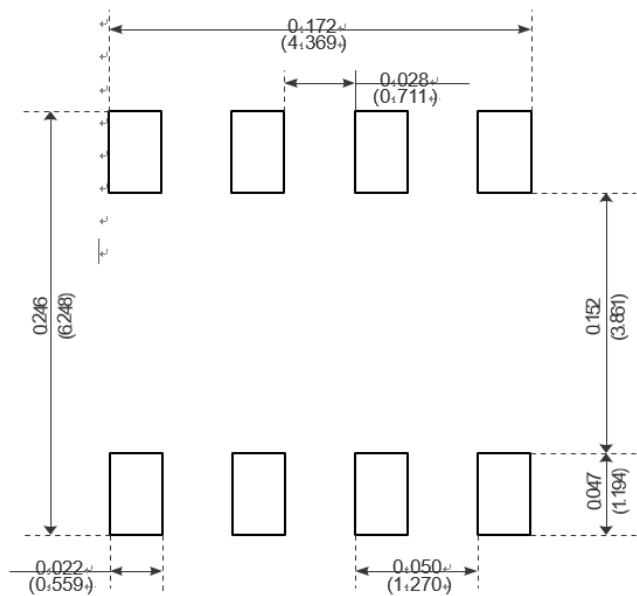


Figure 11 Normalized Maximum Transient Thermal Impedance

# Package Mechanical Data:SOP-8L



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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



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