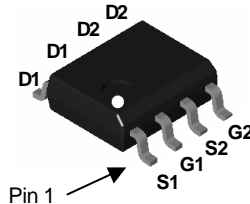
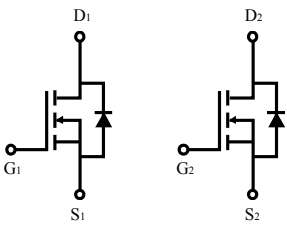
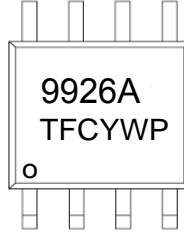


N-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The 9926A uses advanced trench technology to provide excellent <math>R_{DS(on)}</math> and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.</p> <p><b>General Features</b></p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="3">PRODUCT SUMMARY</th> </tr> <tr> <th><math>V_{DSS}</math></th> <th><math>I_D</math></th> <th><math>R_{DS(on)}</math> (m<math>\Omega</math>) Max</th> </tr> </thead> <tbody> <tr> <td rowspan="2">20V</td> <td>6.0A</td> <td>25 @ <math>V_{GS} = 4.5V</math></td> </tr> <tr> <td>5.2A</td> <td>32 @ <math>V_{GS} = 2.5V</math></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>● High power and current handing capability</li> <li>● Lead free product is acquired</li> <li>● Surface mount package</li> </ul>	PRODUCT SUMMARY			$V_{DSS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ ) Max	20V	6.0A	25 @ $V_{GS} = 4.5V$	5.2A	32 @ $V_{GS} = 2.5V$	<p><b>SOP-8L</b></p>  <p><b>Equivalent Circuit</b></p>  <p><b>MARKING</b></p>  <p>Y :year code W :week code</p>
PRODUCT SUMMARY												
$V_{DSS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ ) Max										
20V	6.0A	25 @ $V_{GS} = 4.5V$										
	5.2A	32 @ $V_{GS} = 2.5V$										

Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>A</sup>	$T_A=25^\circ C$ $I_D$	6.0	A
Pulsed Drain Current <sup>B</sup>		30	
Power Dissipation <sup>A</sup>	$T_A=25^\circ C$ $T_A=70^\circ C$ $P_D$	2	W
		1.2	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

Thermal Characteristics					
Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$t \leq 10s$	$R_{\theta JA}$	48	62.5	$^\circ C/W$
Maximum Junction-to-Ambient <sup>A</sup>	Steady-State		74	110	$^\circ C/W$
Maximum Junction-to-Lead <sup>C</sup>	Steady-State	$R_{\theta JL}$	35	40	$^\circ C/W$



# SOP-8 Plastic-Encapsulate MOSFETS

9926A

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	20			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V			500	nA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±12V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.5	0.65	1.0	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 5V	20			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6.0A		20	25	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 5.2A		26	32	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> = 15V, I <sub>D</sub> = 6.0A		22		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> = 3A, V <sub>GS</sub> = 0V		0.7	1.2	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				3	A

**DYNAMIC PARAMETERS**

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 30V, f = 1MHz		931		pF
C <sub>oss</sub>	Output Capacitance			60		pF
C <sub>riss</sub>	Reverse Transfer Capacitance			50		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz			9.5	Ω

**SWITCHING PARAMETERS**

Q <sub>g</sub> (4.5V)	Total Gate Charge (4.50V)	V <sub>DD</sub> = 15V, V <sub>GEN</sub> = 4.5V, I <sub>D</sub> = 6A		13		nC
Q <sub>g</sub> (2.5V)	Total Gate Charge (2.5V)			11		nC
Q <sub>gs</sub>	Gate Source Charge			3.2		nC
Q <sub>gd</sub>	Gate Drain Charge			3.5		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>DD</sub> = 15V, V <sub>GEN</sub> = 4.5V, R <sub>L</sub> = 15Ω R <sub>GEN</sub> = 6Ω		24		ns
t <sub>r</sub>	Turn-On Rise Time			40		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			50		ns
t <sub>f</sub>	Turn-Off Fall Time			20		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> = 5A, di/dt = 100A/μs		23.5		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> = 5A, di/dt = 100A/μs		13.4		nC

A: The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

D. The static characteristics in Figures 1 to 6, 12, 14 are obtained using 80μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The SOA curve provides a single pulse rating.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

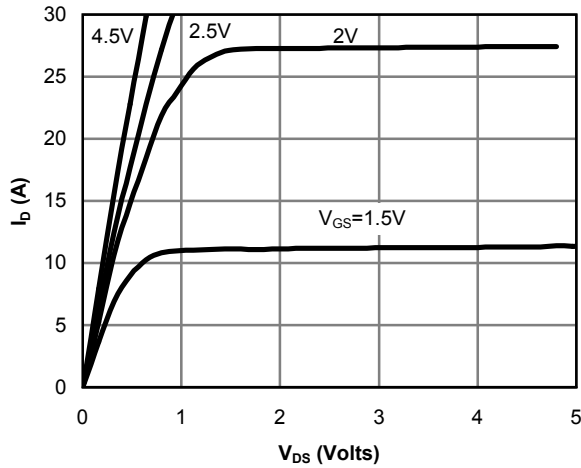


Fig 1: On-Region Characteristics

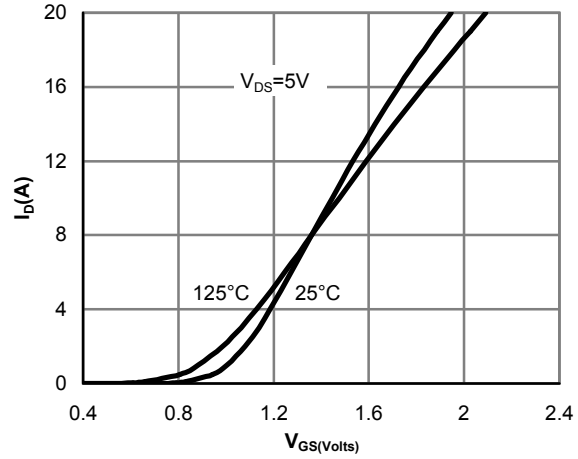


Figure 2: Transfer Characteristics

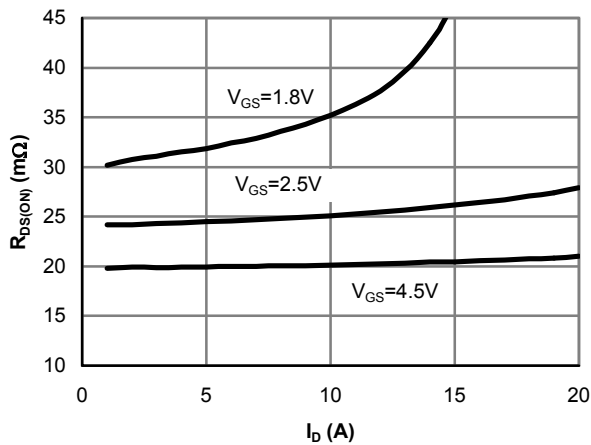


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

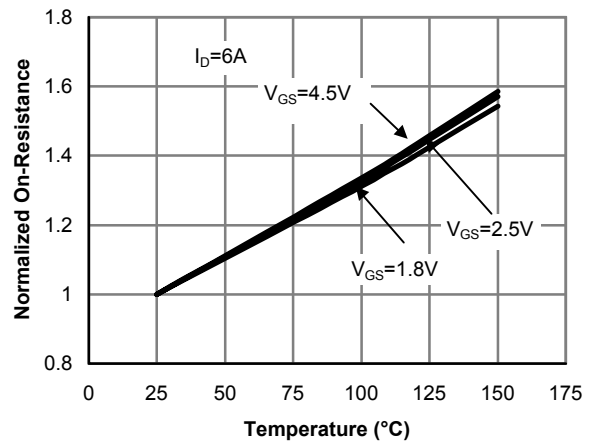


Figure 4: On-Resistance vs. Junction Temperature

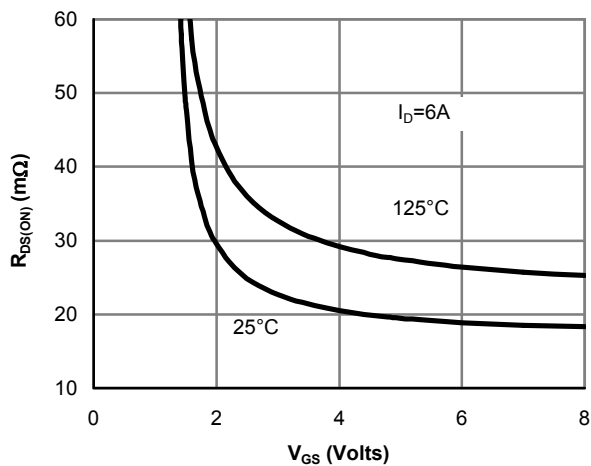


Figure 5: On-Resistance vs. Gate-Source Voltage

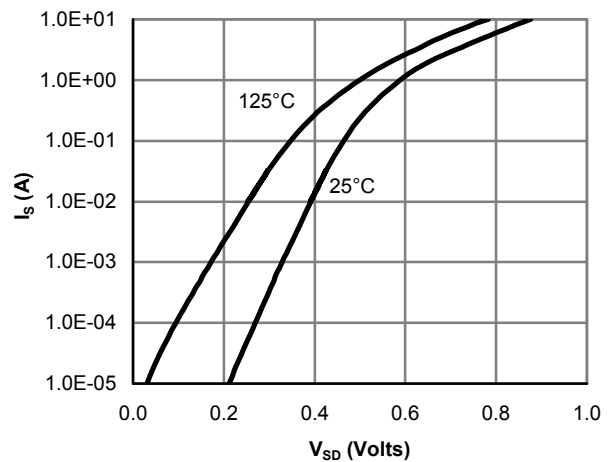


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

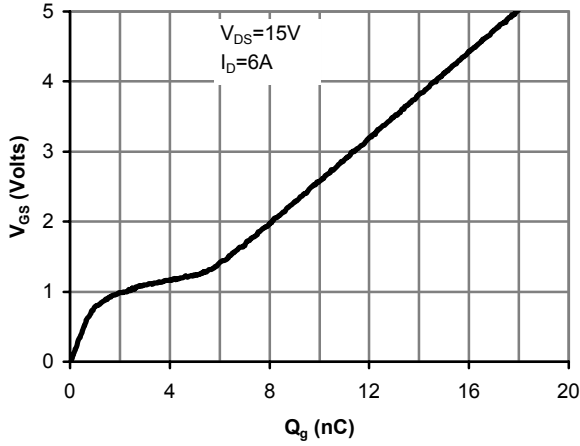


Figure 7: Gate-Charge Characteristics

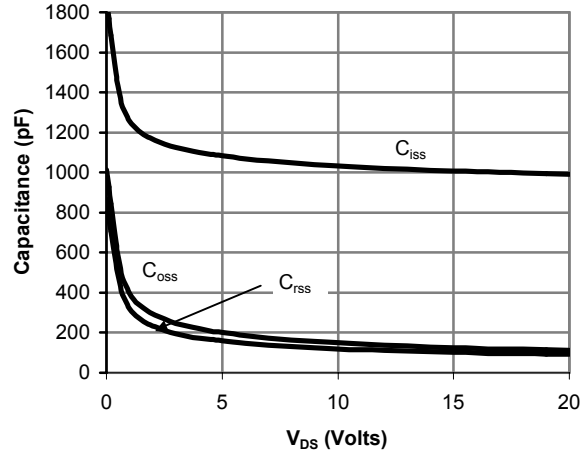


Figure 8: Capacitance Characteristics

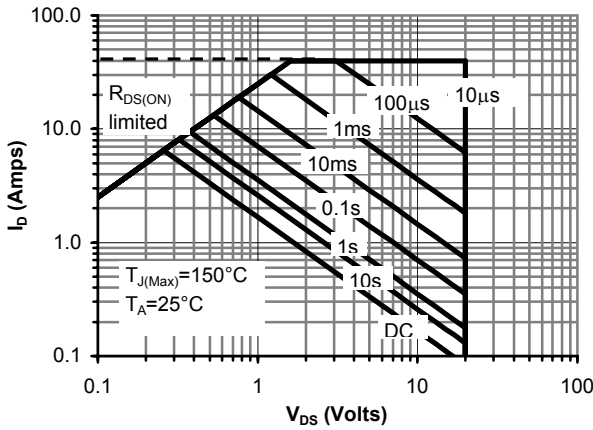


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

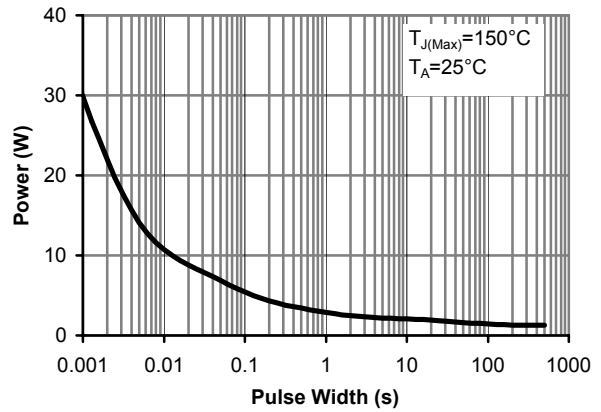


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

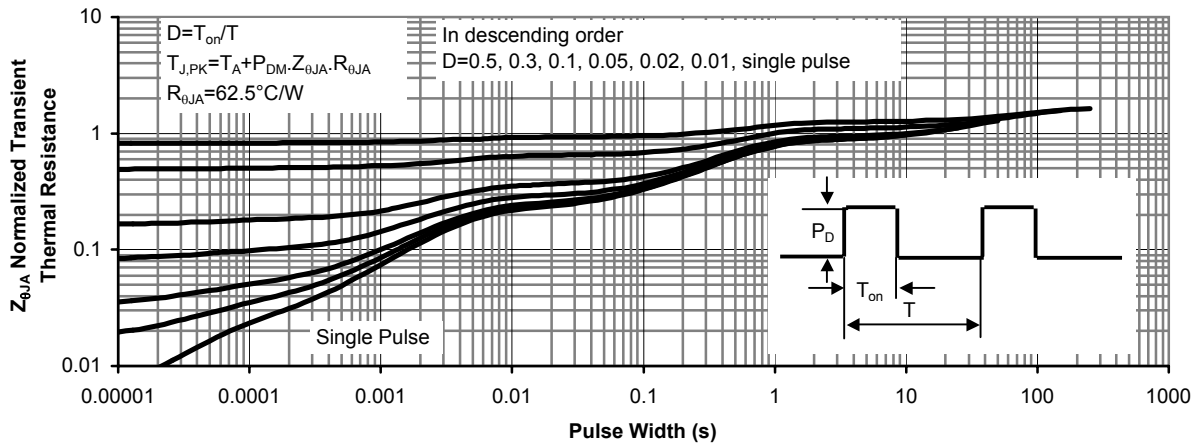
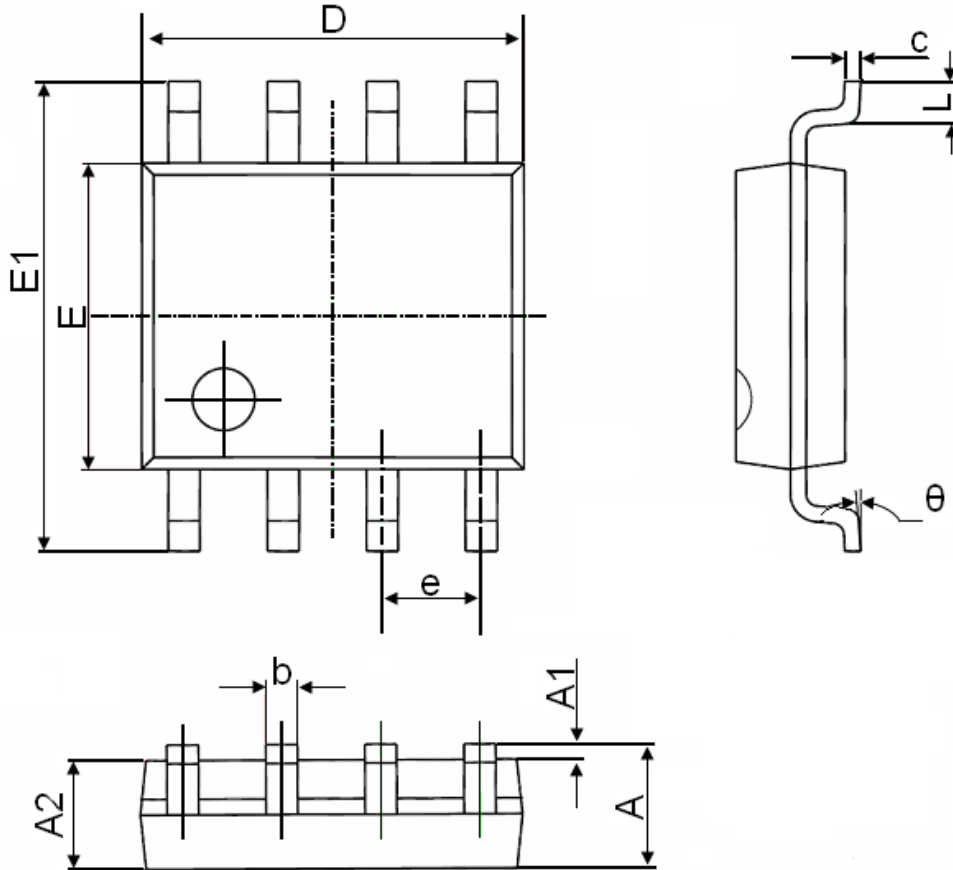


Figure 11: Normalized Maximum Transient Thermal Impedance

# SOP-8 Plastic-Encapsulate MOSFETS

9926A

## SOP-8 Package Information



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
$\theta$	0°	8°	0°	8°