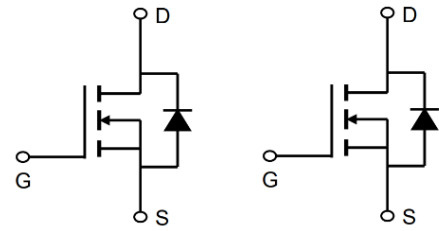


## 20V N+N-Channel Enhancement Mode MOSFET

### Description

The AP9926A uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.



### General Features

$V_{DS} = 20V$   $I_D = 6.5A$

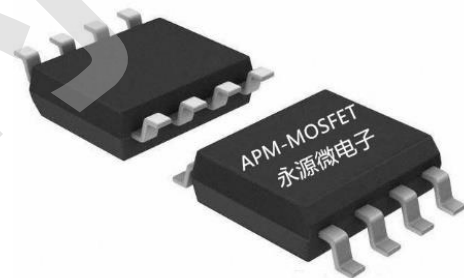
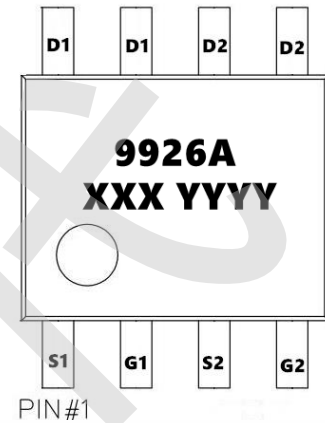
$R_{DS(ON)} < 28m\Omega$  @  $V_{GS}=10V$  (Type: 20m $\Omega$ )

### Application

Battery protection

Load switch

Wireless charging



### Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP9926A	SOP-8L	9926A	3000

### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	20	V
V <sub>GS</sub>	Gate-Source Voltage	±12	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	6.5	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	4	A
IDM	Pulsed Drain Current <sup>2</sup>	24	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation <sup>4</sup>	1.2	W
TSTG	Storage Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	78	°C/W

AP9926A RVE3.3

## 20V N+N-Channel Enhancement Mode MOSFET

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	22	-	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V,$	-	-	1.0	$\mu A$
IGSS	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	$\pm 100$	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.2	V
RDS(on)	Static Drain-Source on-Resistance note3	$V_{GS}=4.5V, I_D=6A$	-	20	28	m $\Omega$
		$V_{GS}=2.5V, I_D=5A$	-	25.5	38	
Ciss	Input Capacitance	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	358	-	pF
Coss	Output Capacitance		-	69.3	-	pF
Crss	Reverse Transfer Capacitance		-	58.5	-	pF
Qg	Total Gate Charge	$V_{DS}=10V, I_D=3A,$ $V_{GS}=4.5V$	-	5.6	-	nC
Qgs	Gate-Source Charge		-	0.8	-	nC
Qgd	Gate-Drain("Miller") Charge		-	1.0	-	nC
td(on)	Turn-on Delay Time	$V_{DS}=10V, I_D=6A,$ $R_G=3\Omega, V_{GS}=4.5V$	-	16	-	ns
tr	Turn-on Rise Time		-	51	-	ns
td(off)	Turn-off Delay Time		-	21	-	ns
tr	Turn-off Fall Time		-	18	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	24	A
VSD	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	-	-	1.2	V

#### Notes:

- 1、 Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2、 EAS condition :  $T_J=25^\circ\text{C}$ ,  $V_{DD}=30V$ ,  $V_G=10V$ ,  $L=0.5mH$ ,  $R_G=25\Omega$ ,  $I_{AS}=3.5A$
- 3、 Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$

## 20V N+N-Channel Enhancement Mode MOSFET

### Typical Characteristics

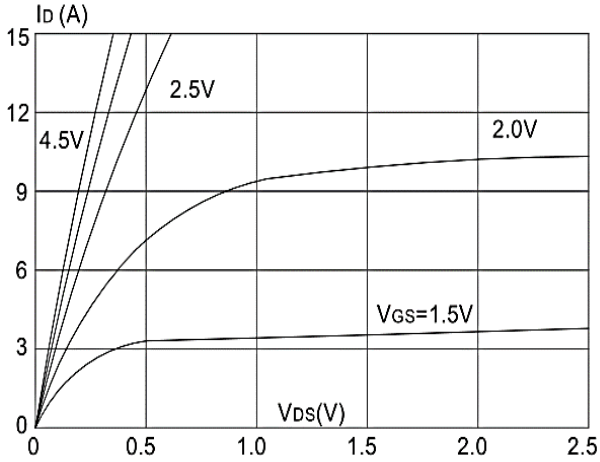


Figure 1: Output Characteristics

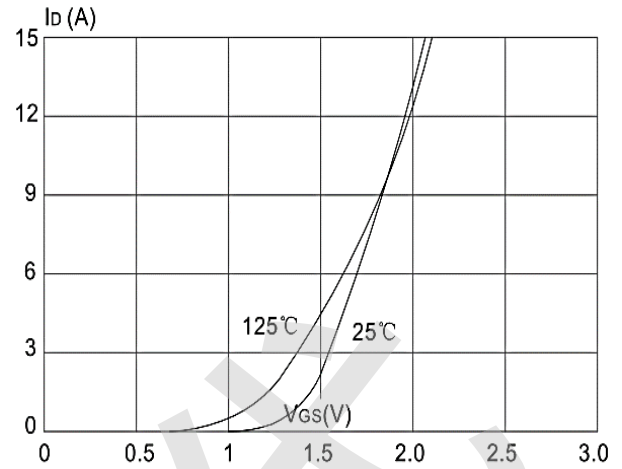


Figure 2: Typical Transfer Characteristics

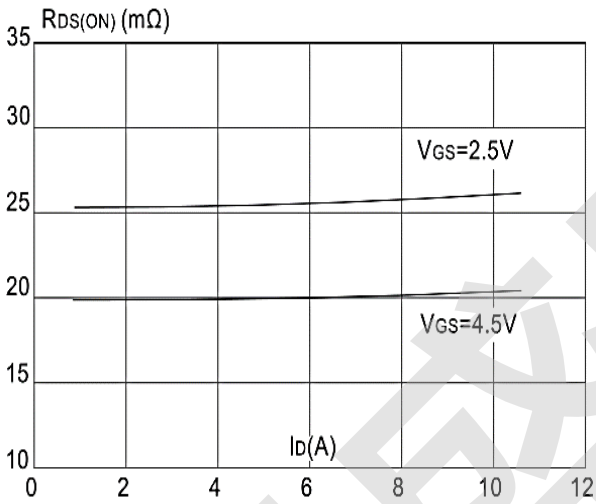


Figure 3: On-resistance vs. Drain Current

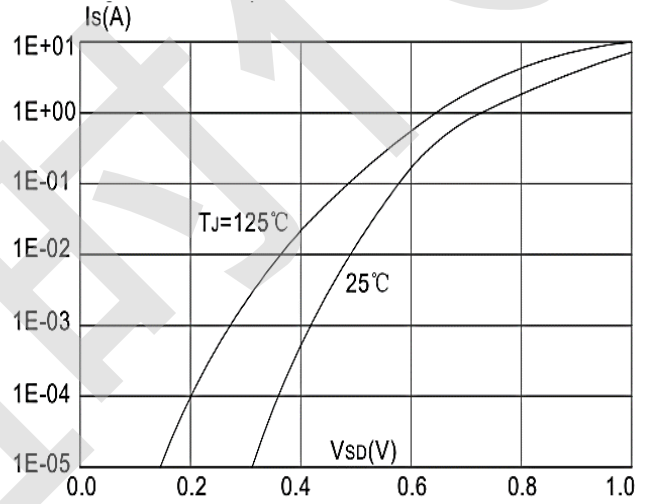


Figure 4: Body Diode Characteristics

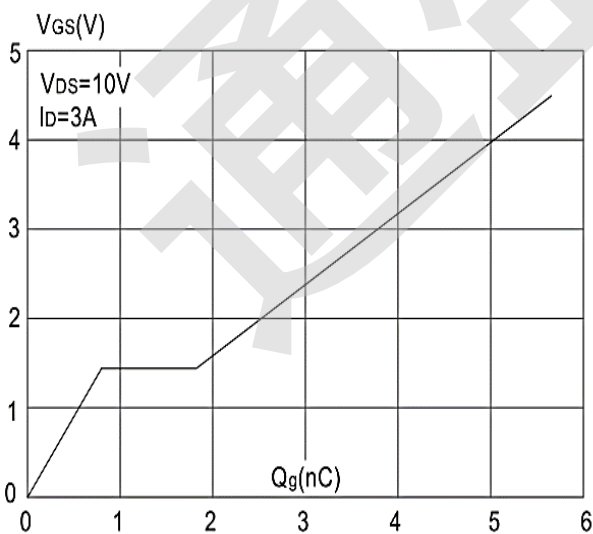


Figure 5: Gate Charge Characteristics

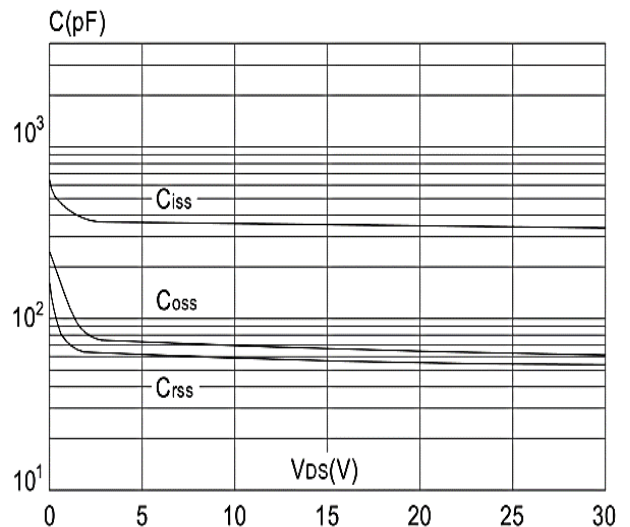
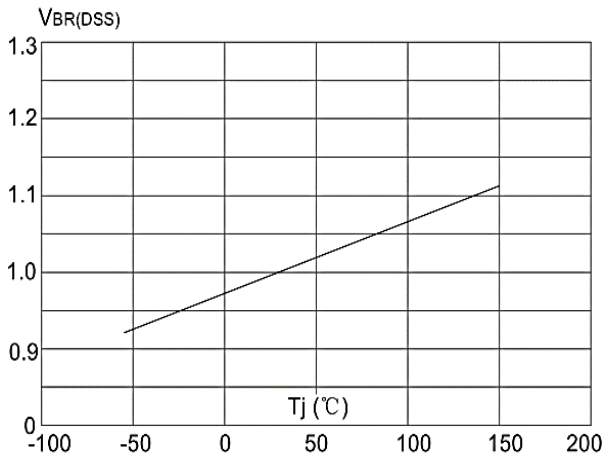


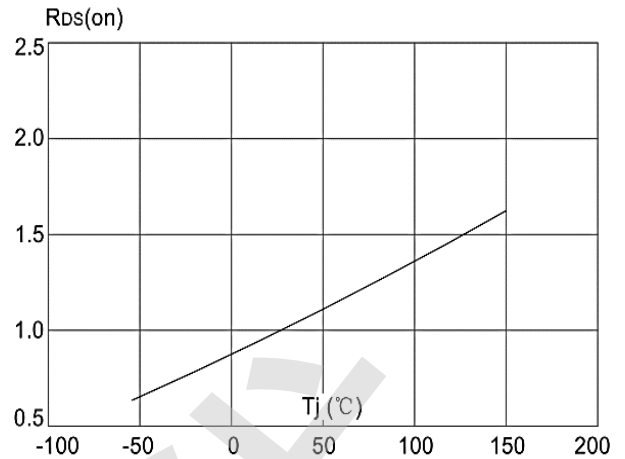
Figure 6: Capacitance Characteristics



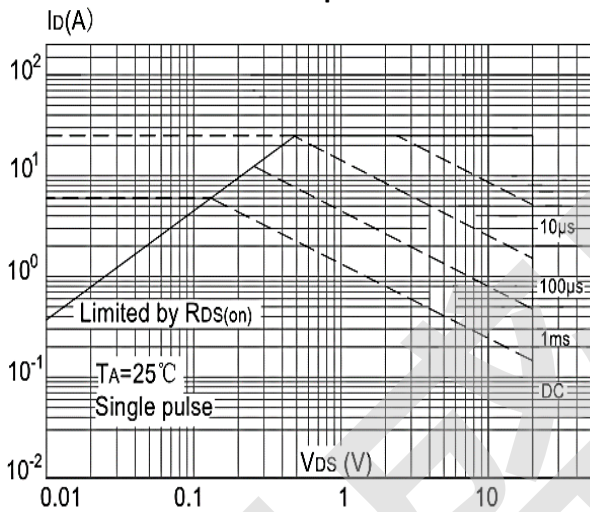
## 20V N+N-Channel Enhancement Mode MOSFET



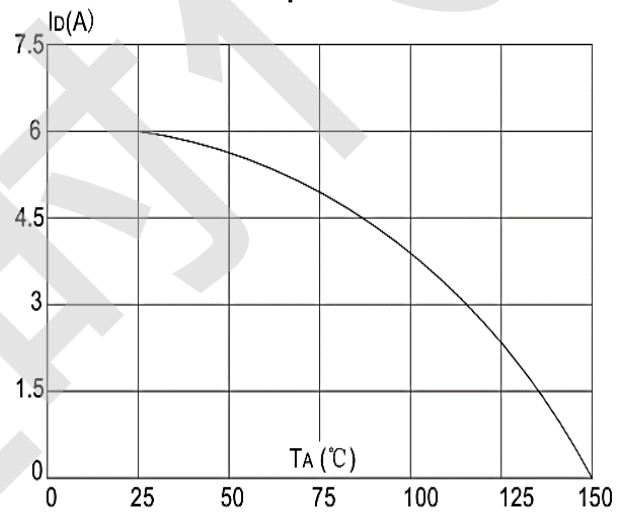
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



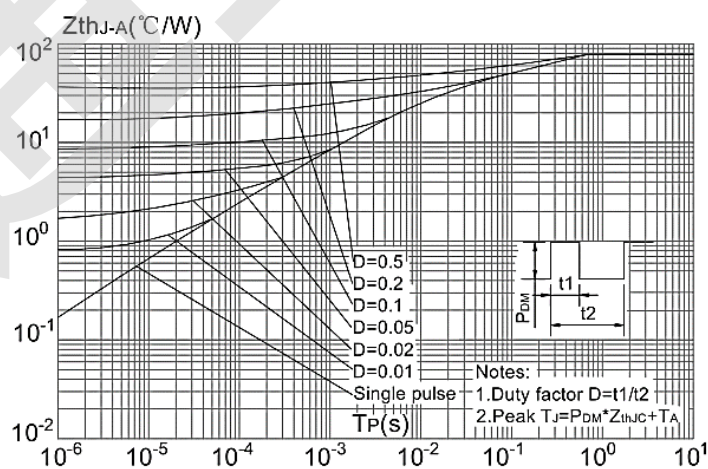
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area vs. Case Temperature**

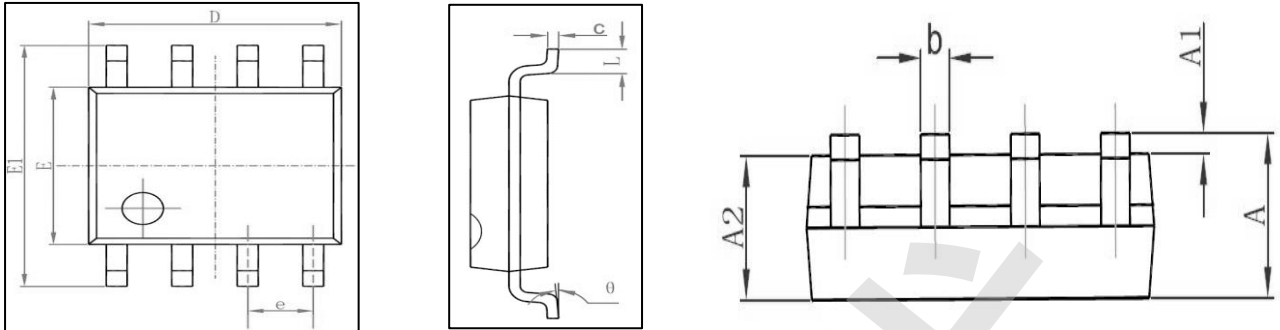


**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**

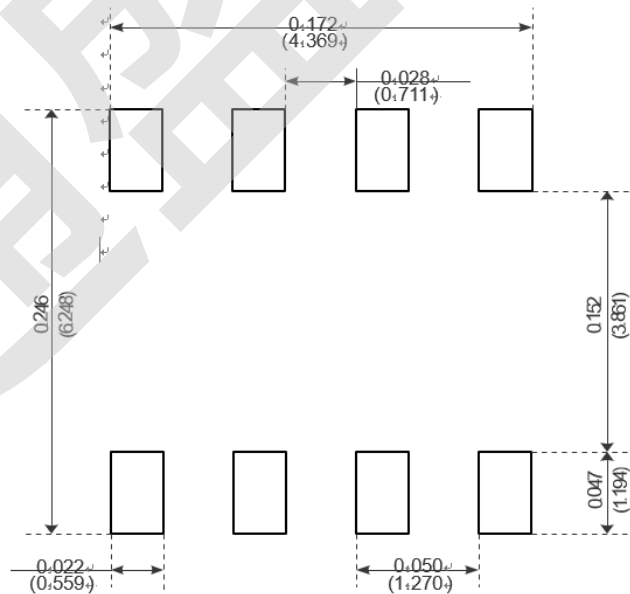


**Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case**

### Package Mechanical Data-SOP-8/ESOP-8



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°



Recommended Minimum Pads

**20V N+N-Channel Enhancement Mode MOSFET****Attention**

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## 20V N+N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve3.2	2018/12/1	Initial release
Rve3.3	2021/3/31	Change of specification format

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