

TM018V03S

P+P-Channel Enhancement Mode Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

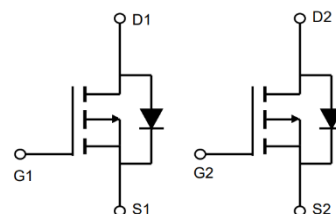
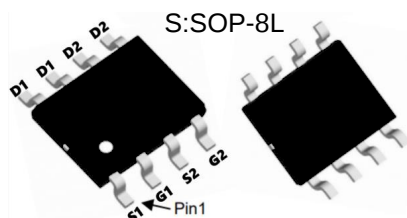
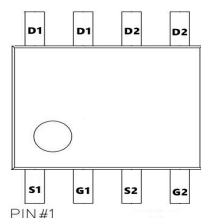
Product Summary

$V_{DS} = -30V$ $I_D = -9.0A$

$R_{DS(ON)} = 18m\Omega (typ.) @ V_{GS} = -10V$

100% UIS Tested

100% R_g Tested



Marking: 9V03 OR 4805

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain- Source Voltage		-30	V
V_{GSS}	Gate- Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	-9.0	A
		$T_A = 100^\circ C$	-5.9	A
I_{DM}	Pulsed Drain Current ^{note1}		-36	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		25	mJ
P_D	Power Dissipation	$T_A = 25^\circ C$	3.3	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		38	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to + 150	$^\circ C$



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Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain- Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-30	---	---	V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =- 1mA	---	-0.022	---	V/ °C
R _{DS(ON)}	Static Drain- Source On-Resistance ²	V _{GS} =- 10V , I _D =-6A	---	18	25	mΩ
		V _{GS} =-4.5V , I _D =-4A	---	25	42	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	---	-2.5	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.6	---	mV/ °C
I _{DSS}	Drain- Source Leakage Current	V _{DS} =-24V , V _{GS} =0V , T _J =25°C	---	---	-1	uA
		V _{DS} =-24V , V _{GS} =0V , T _J =55°C	---	---	-5	
I _{GSS}	Gate- Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V , I _D =-6A	---	17	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	13	---	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =- 15V , V _{GS} =-4.5V , I _D =-6A	---	12.6	---	nC
Q _{gs}	Gate- Source Charge		---	4.8	---	
Q _{gd}	Gate- Drain Charge		---	4.8	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =- 15V , V _{GS} =- 10V , R _G =3.3Ω , I _D =-6A	---	4.6	---	ns
T _r	Rise Time		---	14.8	---	
T _{d(off)}	Turn-Off Delay Time		---	41	---	
T _f	Fall Time		---	19.6	---	
C _{iss}	Input Capacitance	V _{DS} =- 15V , V _{GS} =0V , f=1MHz	---	1345	---	pF
C _{oss}	Output Capacitance		---	194	---	
C _{rss}	Reverse Transfer Capacitance		---	158	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1, 5}	V _G =V _D =0V , Force Current	---	---	-9.0	A
I _{SM}	Pulsed Source Current ^{2, 5}		---	---	-26	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =- 1A , T _J =25°C	---	---	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-6A , dI/dt=100A/μs , T _J =25°C	---	16.3	---	ns
Q _{rr}	Reverse Recovery Charge		---	5.9	---	nC

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3. The EAS data shows Max. rating . The test condition is V_{DD}=-25V, V_{GS}=- 10V, L=0. 1mH, I_{AS}=-38A
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

Figure1 : Output Characteristics

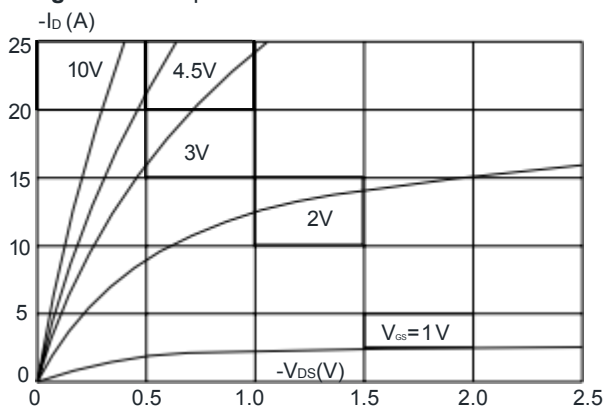


Figure 2 : Typical Transfer Characteristics

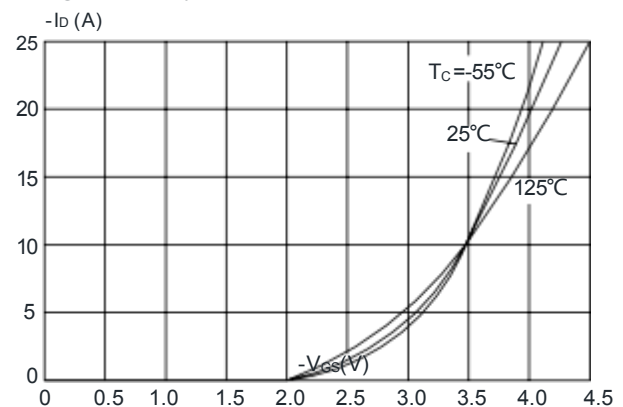


Figure 3: On-resistance vs. Drain Current

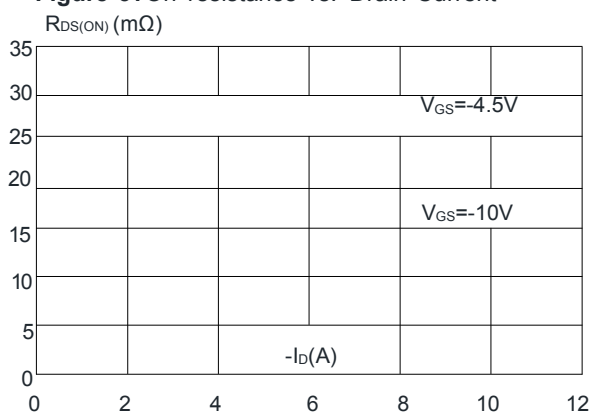


Figure 4 : Body Diode Characteristics

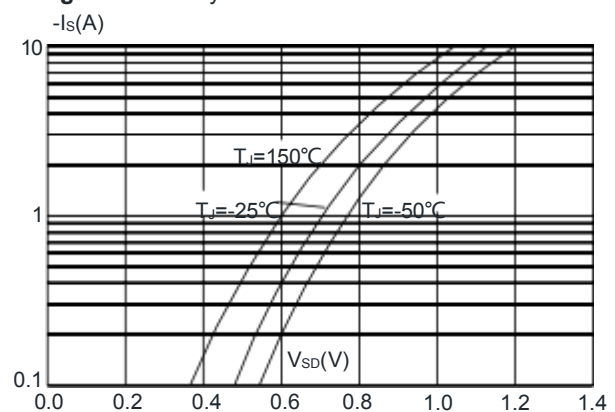


Figure 5: Gate Charge Characteristics

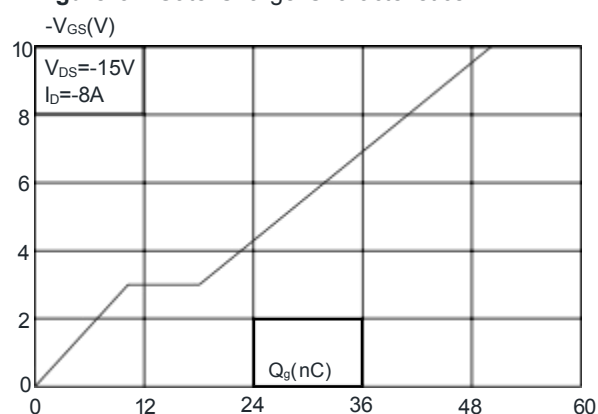
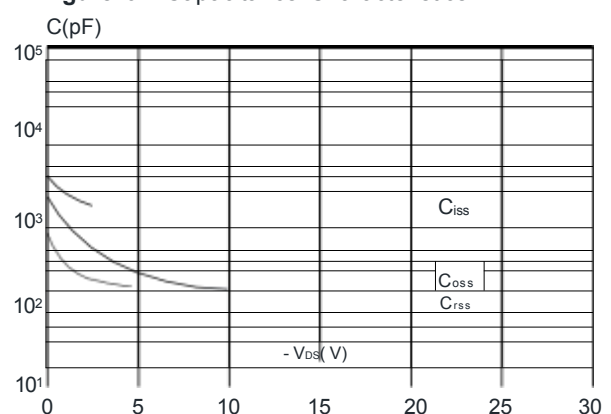


Figure 6: Capacitance Characteristics



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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

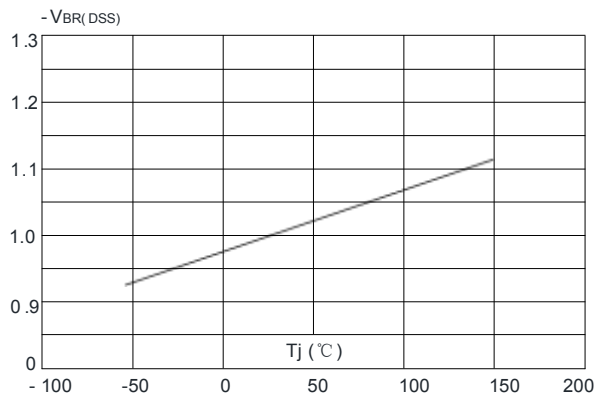


Figure 8: Normalized on Resistance vs. Junction Temperature

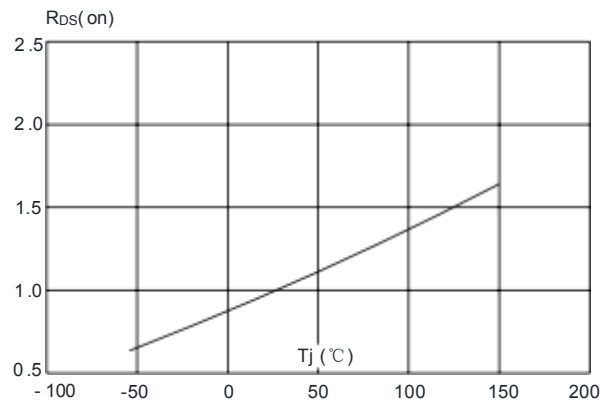


Figure 9: Maximum Safe Operating Area

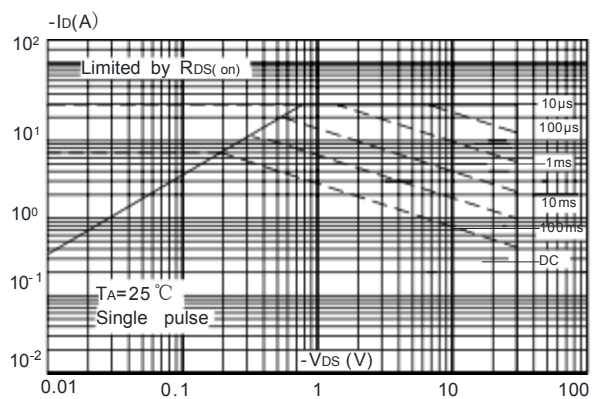
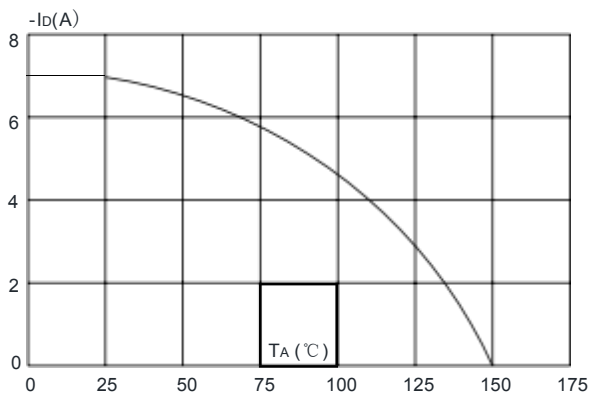
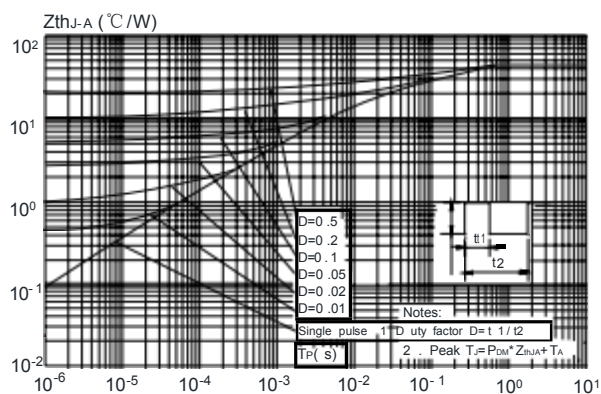


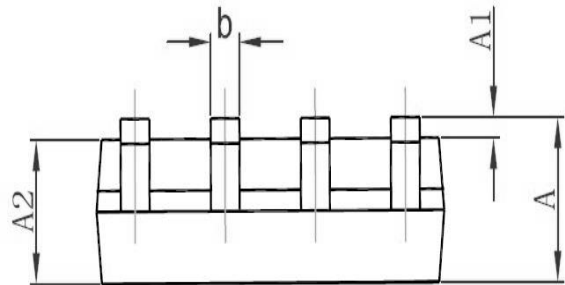
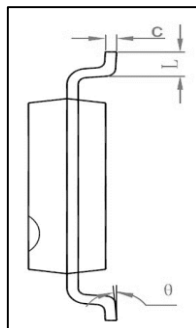
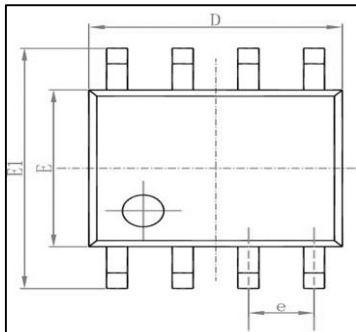
Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature



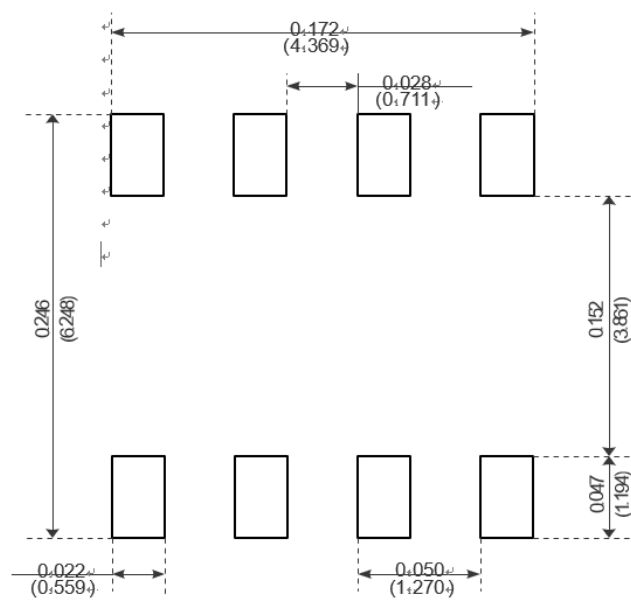
Maximum Effective
Transient Thermal Impedance, Junction-to-Ambient



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°



Recommended Minimum Pads