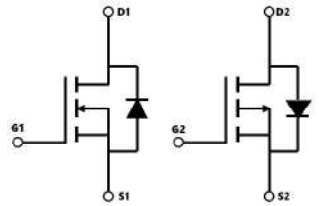
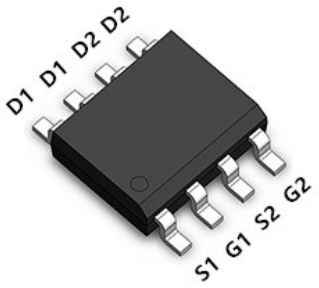
30V N+P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	< 12mΩ
I_D	-9.8A
V_{DSS}	-30V
R_{DSON}-typ(@V_{GS}=-10V)	< -25mΩ





SOP-8

Pb lead-free ROHS

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW10G03S	SOP-8	YFW 10G03S XXXX	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value		Units
		N-Ch	P-Ch	
Drain-Source Voltage	VDS	30	-30	V
Gate - Source Voltage	VGS	±20	±20	V
Continuous Drain Current, V_{GS} @ 10V[1]@T_A=25℃	I_D	12	-9.8	A
Continuous Drain Current, V_{GS} @ 10V[1]@T_A=70℃	I_D	7	-5.2	A
Pulsed Drain Current[2]	I_{DM}	36	-26	A
Single Pulse Avalanche Energy[3]	E_{AS}	24	72	mJ
Avalanche Current	I_{AS}	22	-38	A
Total Power Dissipation[4]@T_A=25℃	P_D	1.5	1.5	W
Storage Temperature Range	T_{STG}	-55 to +150	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	-55 to +150	°C
Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	-	85	°C/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	-	25	°C/W

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N-Channel Electrical Characteristics (TJ=25 ℃, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	30	-	-	V
BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	$\Delta BV_{DSS/\Delta TJ}$	-	0.023	-	V/℃
Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=8A	$R_{DS(ON)}$	-	-	12	mΩ
	V_{GS}=4.5V, I_D=6A		-	-	18	
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.2	-	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-5.08	-	mV/℃
Drain-Source Leakage Current	V_{DS}=24V, V_{GS}=0V T_J=25℃	I_{DSS}	-	-	1	uA
	V_{DS}=24V , V_{GS}=0V , T_J=55℃		-	-	5	
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS} = 5V, I_D = 8A	g_{fs}	-	24	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	1.8	-	Ω
Total Gate Charge(4.5V)	V_{DS}=15V V_{GS}=4.5V I_D=8A	Q_g	-	9.63	-	nC
Gate-Source Charge		Q_{gs}	-	3.88	-	
Gate-Drain Charge		Q_{gd}	-	3.44	-	
Turn-on delay time	V_{DD} =15V V_{GS}=10V R_G = 1.5 I_D= 8A	$t_{d(on)}$	-	4.2	-	ns
Rise Time		T_r	-	8.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	31	-	
Fall Time		t_f	-	4	-	
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1MHz	C_{iss}	-	940	-	pF
Output Capacitance		C_{oss}	-	131	-	
Reverse Transfer Capacitance		C_{rss}	-	109	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	9	A
Pulsed Source Current[2,5]		I_{SM}	-	-	36	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	V_{SD}	-	-	1	V
Reverse Recovery Time	IF=8A , dI/dt=100A/μs , T_J=25℃	t_{rr}	-	8	-	nS
Reverse Recovery Charge		Q_{rr}	-	2.9	-	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 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}=21A
4 .The power dissipation is limited by 150℃ 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.

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P-Channel Electrical Characteristics (TJ=25 ℃, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	BV_{DSS}	-30	-	-	V
BVDSS Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta BV_{DSS/\Delta TJ}$	-	-0.022	-	V/℃
Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-6A	$R_{DS(ON)}$	-	-	25	mΩ
	V_{GS}=-4.5V, I_D=-4A		-	-	42	
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.0	-	-2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.6	-	mV/℃
Drain-Source Leakage Current	V_{DS}=-24V, V_{GS}=0V T_J=25℃	I_{DSS}	-	-	-1	uA
	V_{DS}=-24V , V_{GS}=0V , T_J=55℃		-	-	-5	
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS} = -5V, I_D =- 6A	g_{fs}	-	17	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	13	-	
Total Gate Charge(-4.5V)	V_{DS}=-15V V_{GS}=-4.5V I_D=-6A	Q_g	-	12.6	-	nC
Gate-Source Charge		Q_{gs}	-	4.8	-	
Gate-Drain Charge		Q_{gd}	-	4.8	-	
Turn-on delay time	V_{DD} =-15V V_{GS}=-10V R_G = 3.3 I_D=-6A	$t_{d(on)}$	-	4.6	-	ns
Rise Time		T_r	-	14.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	41	-	
Fall Time		t_f	-	19.6	-	
Input Capacitance	V_{DS}-15V V_{GS}=0V f=1MHz	C_{iss}	-	1345	-	pF
Output Capacitance		C_{oss}	-	194	-	
Reverse Transfer Capacitance		C_{rss}	-	158	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	-6.5	A
Pulsed Source Current[2,5]		I_{SM}	-	-	-26	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	V_{SD}	-	-	-1.2	V

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZcopper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data sh.The power dissipation is limited by ows Max. rating
4. The test condition is 150℃ junction temperature V_{DD}=-25 V,V_{GS}=-10V,L=0.1mH,I_{AS}=-30A
5 .The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

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Ratings and Characteristic Curves

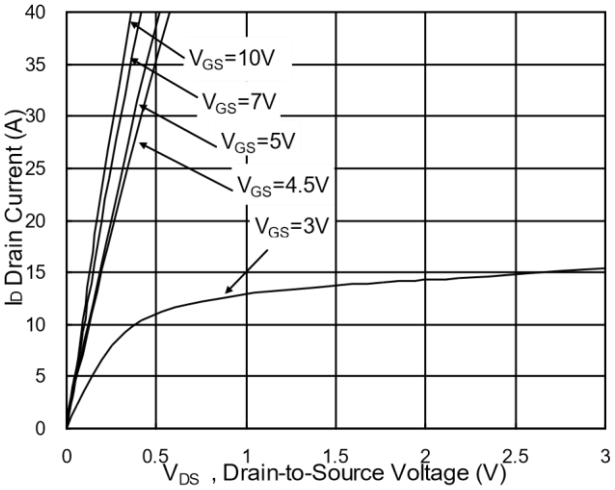


Fig.1 Typical Output Characteristics

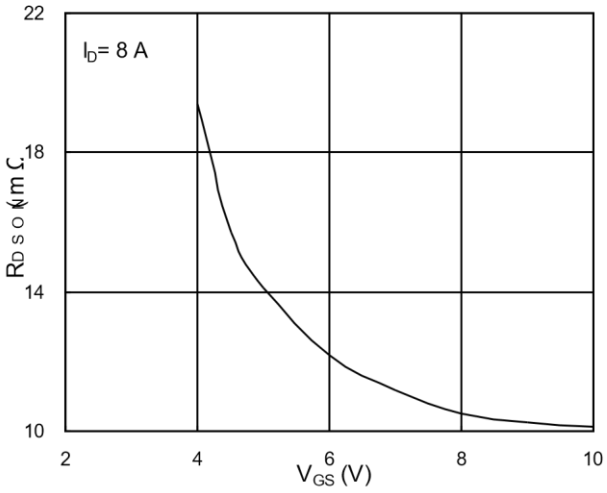


Fig.2 On-Resistance vs. G-S Voltage

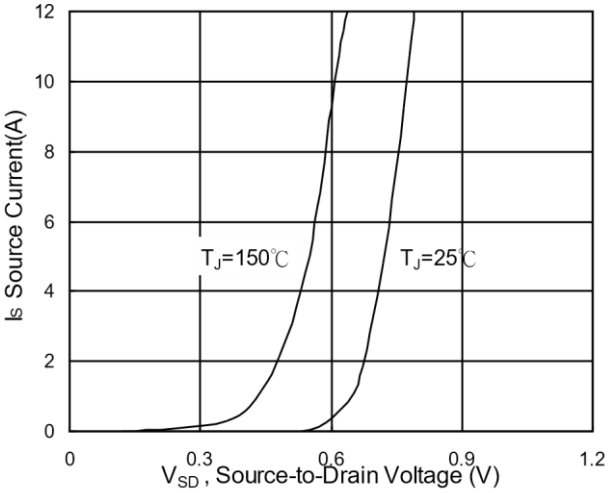


Fig.3 Forward Characteristics of Reverse

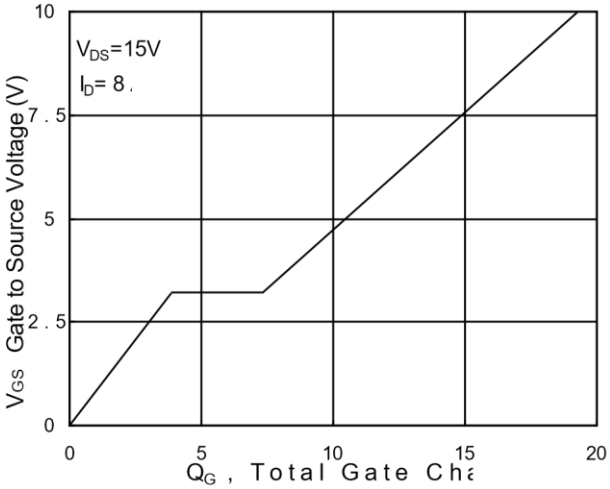


Fig.4 Gate-Charge Characteristics

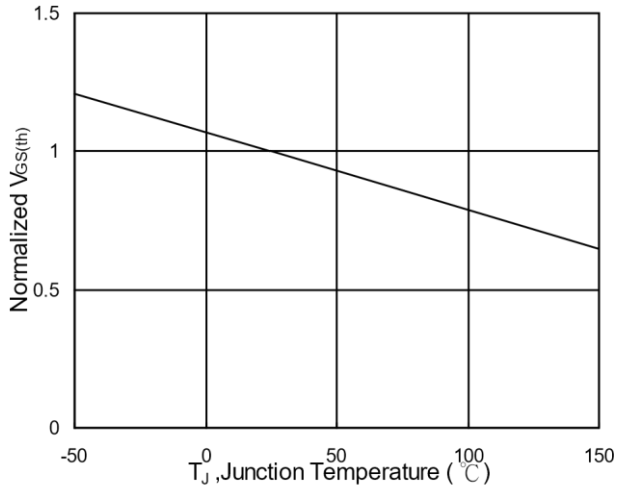


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

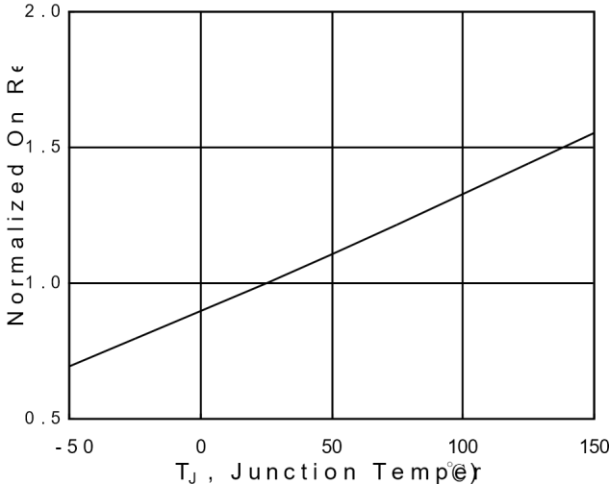


Fig.6 Normalized R_{DSON} vs. T_J

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Ratings and Characteristic Curves

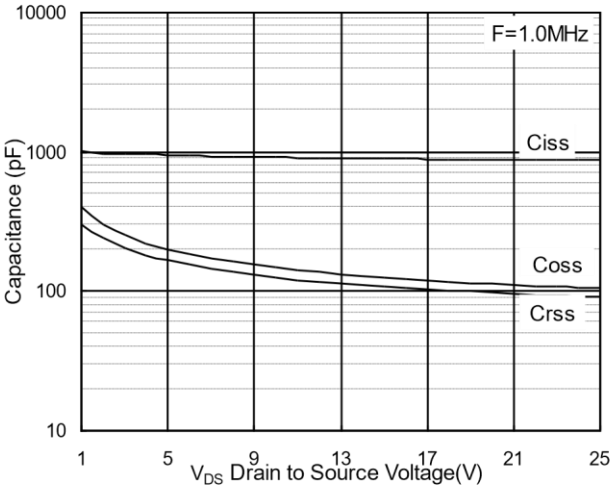


Fig.7 Capacitance

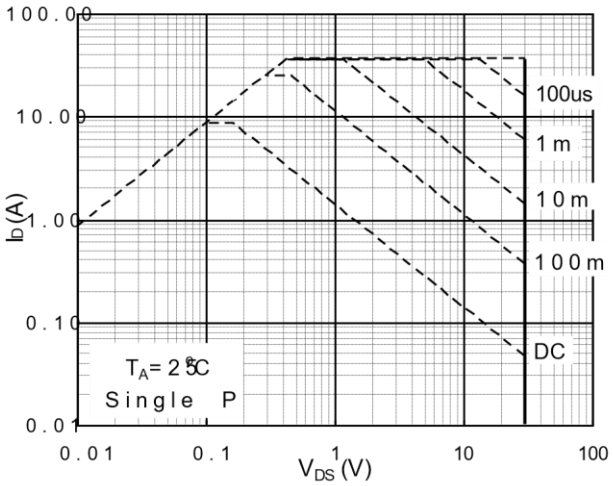


Fig.8 Safe Operating Area

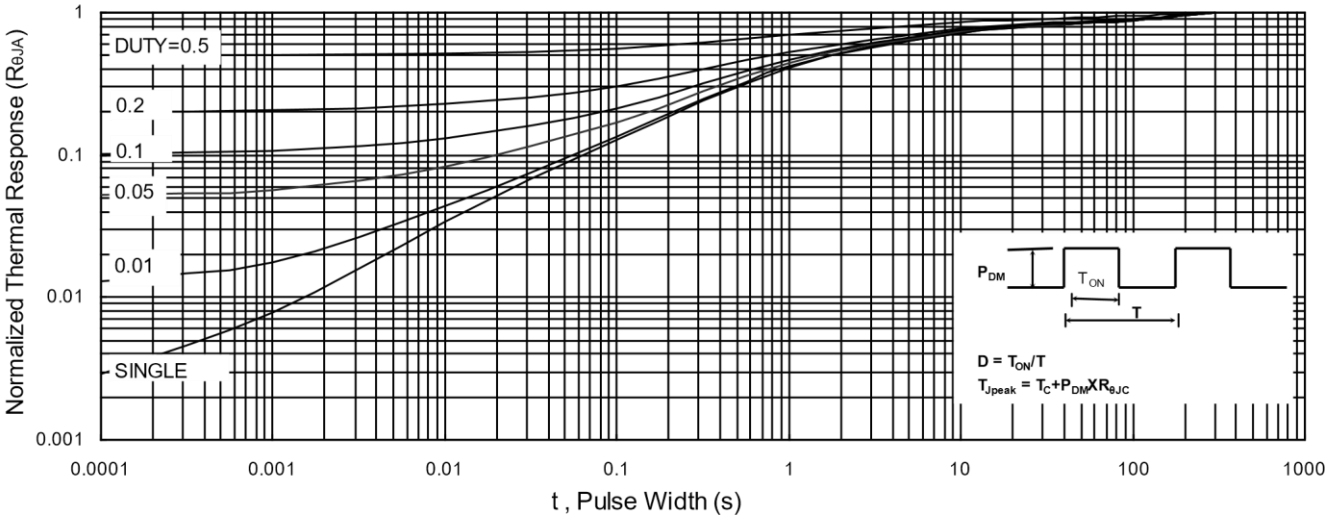


Fig.9 Normalized Maximum Transient Thermal Impedance

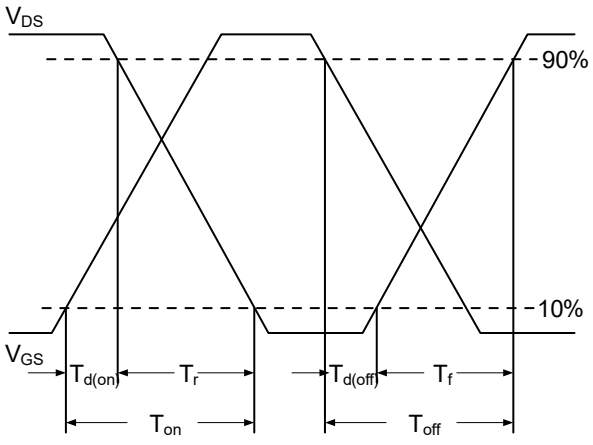


Fig.10 Switching Time Waveform

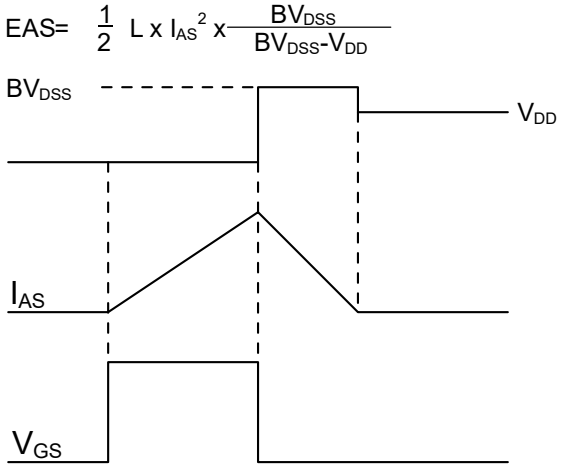


Fig.11 Unclamped Inductive Switching Waveform

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Ratings and Characteristic Curves

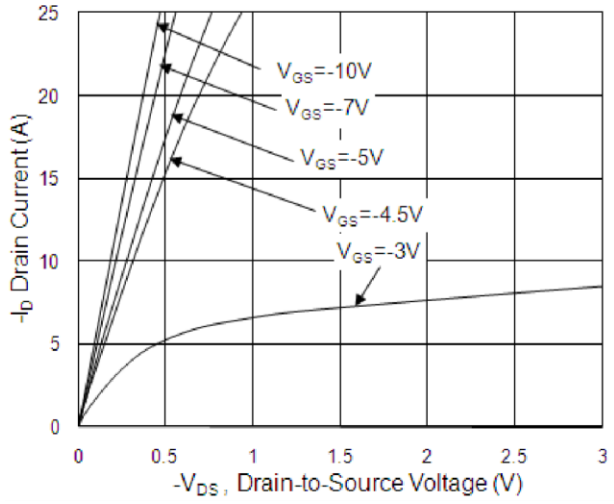


Fig.1 Typical Output Characteristics

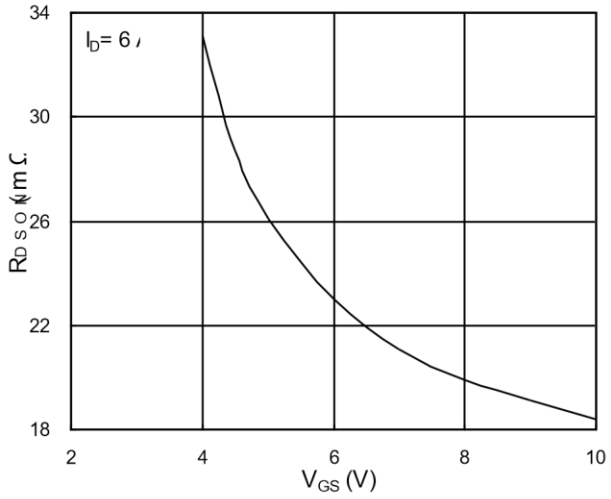


Fig.2 On-Resistance v.s Gate-Source

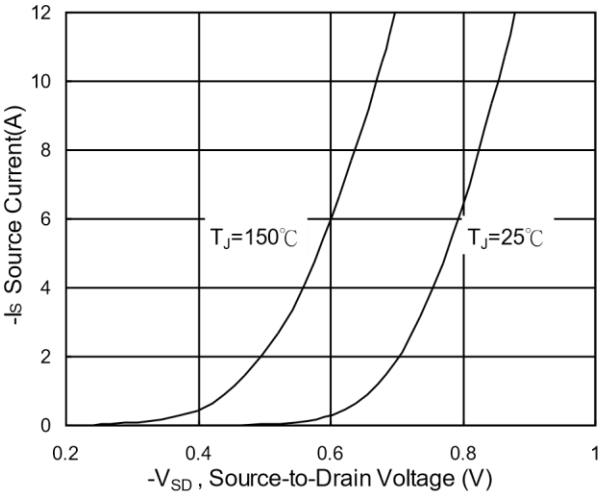


Fig.3 Forward Characteristics of Reverse

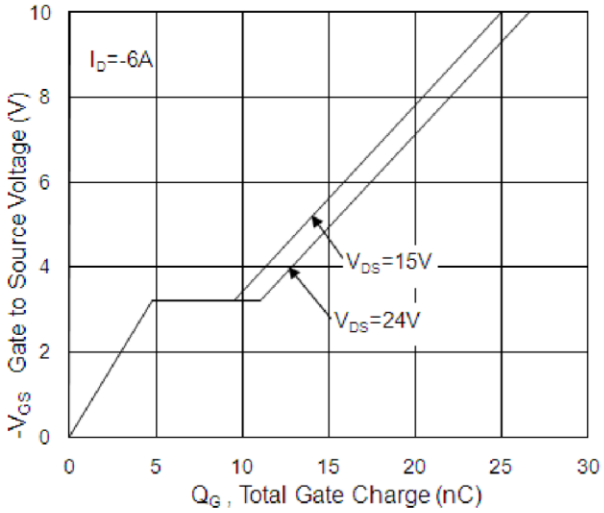


Fig.4 Gate-Charge Characteristics

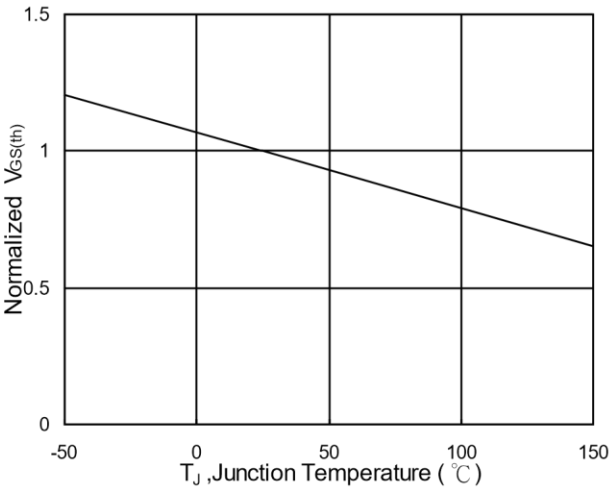


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

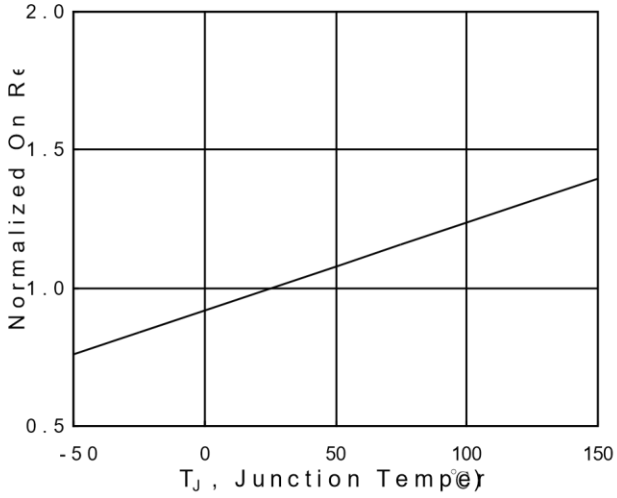


Fig.6 Normalized R_{DSON} v.s T_J

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Ratings and Characteristic Curves

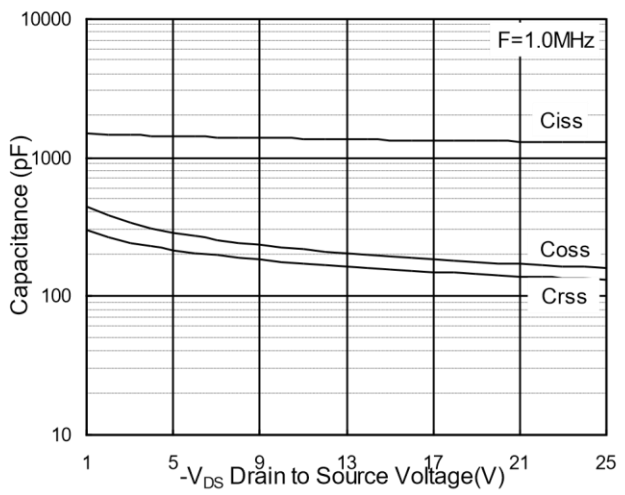


Fig.7 Capacitance

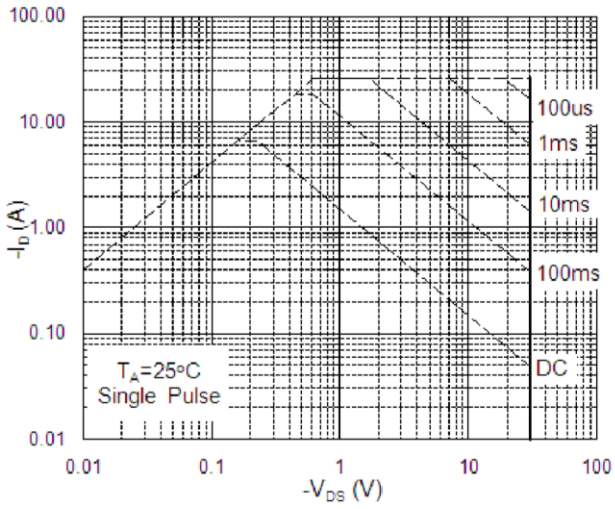


Fig.8 Safe Operating Area

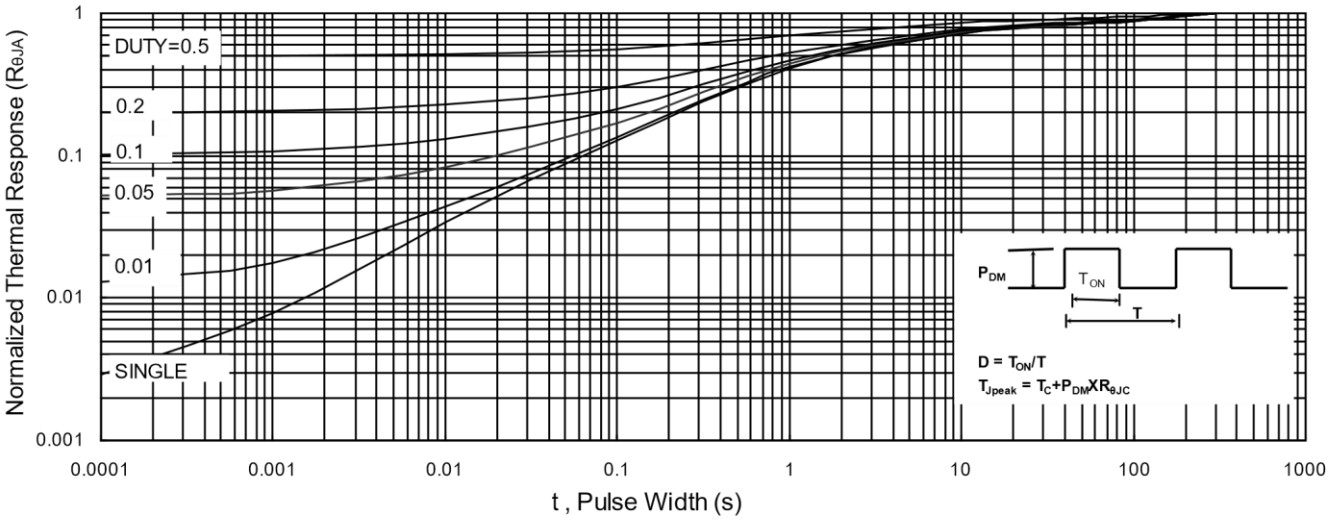


Fig.9 Normalized Maximum Transient Thermal Impedance

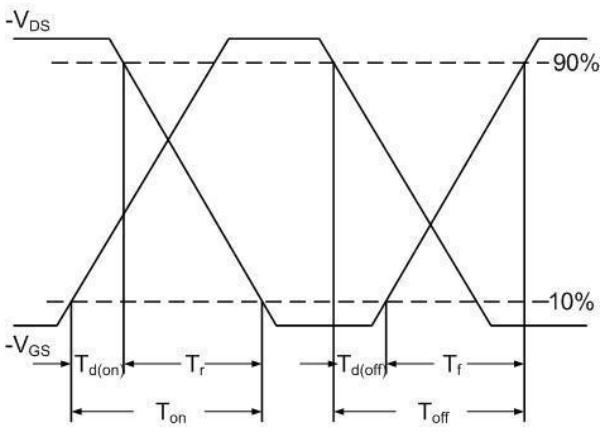


Fig.10 Switching Time Waveform

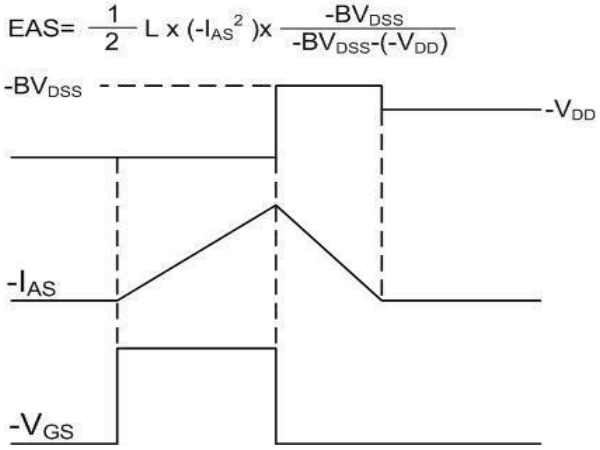
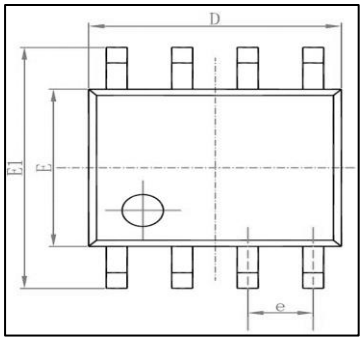


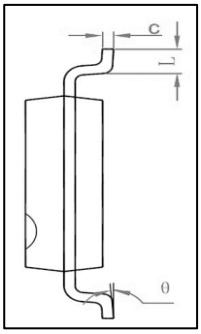
Fig.11 Unclamped Inductive Switching Waveform

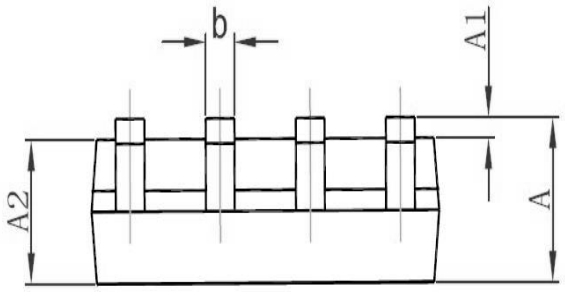
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Package Outline Dimensions Millimeters

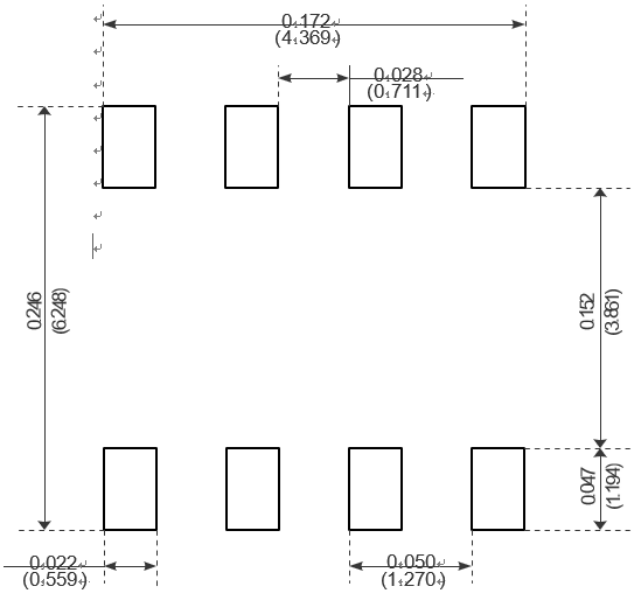
SOP-8







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

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