
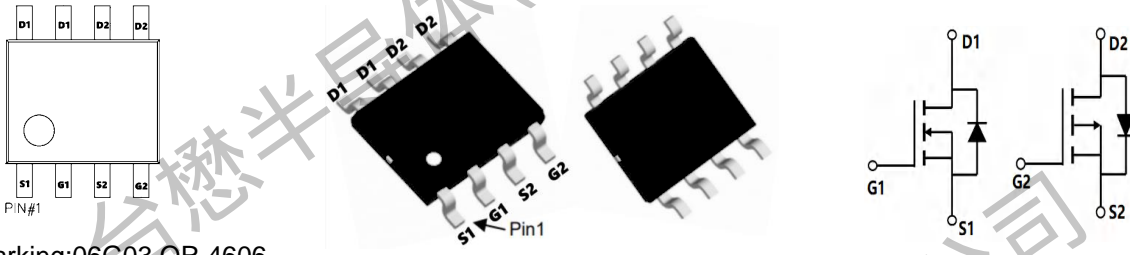


TM06G03S

N+P-Channel Enhancement Mode Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>N Channel</p> <p>$V_{DS} = 30V, I_D = 7.0A$ $R_{DS(ON)} = 22m\Omega (typ.) @ V_{GS} = 10V$</p> <p>P Channel</p> <p>$V_{DS} = -30V, I_D = -5.8A$ $R_{DS(ON)} = 42m\Omega (typ.) @ V_{GS} = -10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
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S:SOP-8L



Marking: 06G03 OR 4606

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

Symbol	Parameter	Rating		Units
		N-Channel	P-Channel	
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	± 20	± 20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	7.0	-5.8	A
$I_D @ T_A = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	4.9	-4.1	A
I_{DM}	Pulsed Drain Current ²	20	-15	A
EAS	Single Pulse Avalanche Energy	22	45	mJ
I_{AS}	Avalanche Current	21	-30	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation	2.0	2.0	W
T_{STG}	Storage Temperature Range	-55 to 175	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	5	$^\circ C/W$



TM06G03S

N+P-Channel Enhancement Mode Mosfet

N-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

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	BVDSS Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.023	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =10A	---	22	29	mΩ
		V _{GS} =4.5V, I _D =5A	---	30	38	
V _{GS(th)}	Gate Threshold Voltage		1.2	1.6	2.0	V
∂V _{GS(th)}	V _{GS(th)} Temperature Coefficient	V _{GS} =V _{DS} , I _D =250uA	---	-5.2	---	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 =10A	---	16	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2.5	5	Ω
Q _g	Total Gate Charge (4.5V)		---	7.2	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =20V, V _{GS} =4.5V, I _D =10A	---	1.4	---	
Q _{gd}	Gate-Drain Charge		---	2.2	---	
T _{d(on)}	Turn-On Delay Time		---	4.1	---	ns
T _r	Rise Time	V _{DD} =15V, V _{GS} =10V, R _G =3.3Ω, I _D =5A	---	9.8	---	
T _{d(off)}	Turn-Off Delay Time		---	15.5	---	
T _f	Fall Time		---	6.0	---	
C _{iss}	Input Capacitance		---	572	---	pF
C _{oss}	Output Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	81	---	
C _{rss}	Reverse Transfer Capacitance		---	65	---	
I _s	Continuous Source Current		---	---	7.0	A
I _{SM}	Pulsed Source Current	V _G =V _D =0V, Force Current	---	---	20	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _s =1A, T _J =25°C	---	---	1.2	V



TM06G03S

N+P-Channel Enhancement Mode Mosfet

P-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

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	---	-0.021	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-7A	---	42	48	mΩ
		V _{GS} =-4.5V, I _D =-5A	---	49	58	
V _{GS(th)}	Gate Threshold Voltage		-1.0	-1.5	-2.0	V
∂V _{GS(th)}	V _{GS(th)} Temperature Coefficient	V _{GS} =V _{DS} , I _D =-250uA	---	-4.2	---	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 =-7A	---	15	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	15	30	
Q _g	Total Gate Charge (-4.5V)		---	9.8	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-20V, V _{GS} =-4.5V, I _D =-7A	---	2.2	---	
Q _{gd}	Gate-Drain Charge		---	3.4	---	
T _{d(on)}	Turn-On Delay Time		---	16.4	---	ns
T _r	Rise Time	V _{DD} =-15V, V _{GS} =-10V, R _G =3.3Ω	---	20.2	---	
T _{d(off)}	Turn-Off Delay Time	I _D =-5A	---	55	---	
T _f	Fall Time		---	10	---	
C _{iss}	Input Capacitance		---	930	---	pF
C _{oss}	Output Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	148	---	
C _{rss}	Reverse Transfer Capacitance		---	115	---	
I _S	Continuous Source Current		---	---	-5.8	A
I _{SM}	Pulsed Source Current	V _G =V _D =0V, Force Current	---	---	-15	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V



TM06G03S

N+P-Channel Enhancement Mode Mosfet

N-Channel Typical Characteristics

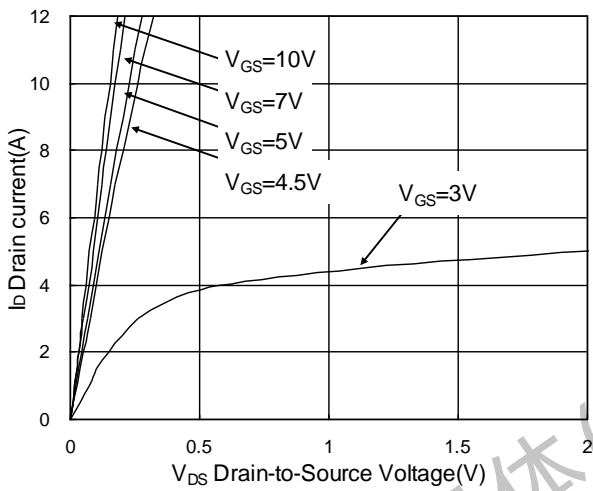


Fig.1 Typical Output Characteristics

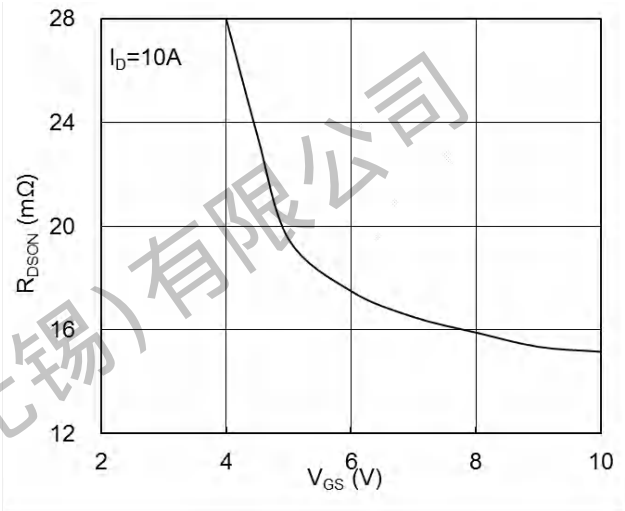


Fig.2 On-Resistance vs Gate-Source Voltage

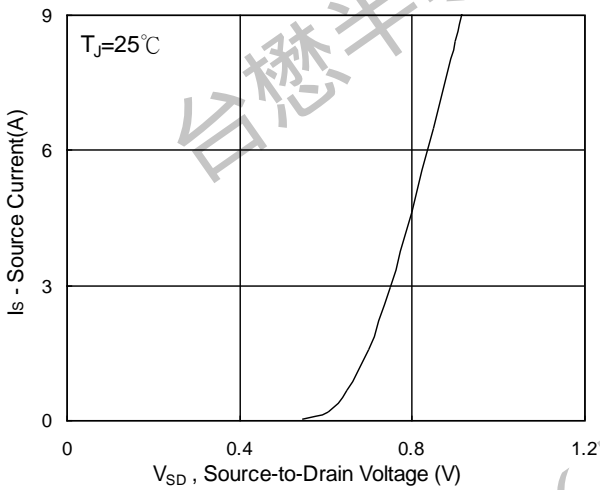


Fig.3 Forward Characteristics of Reverse

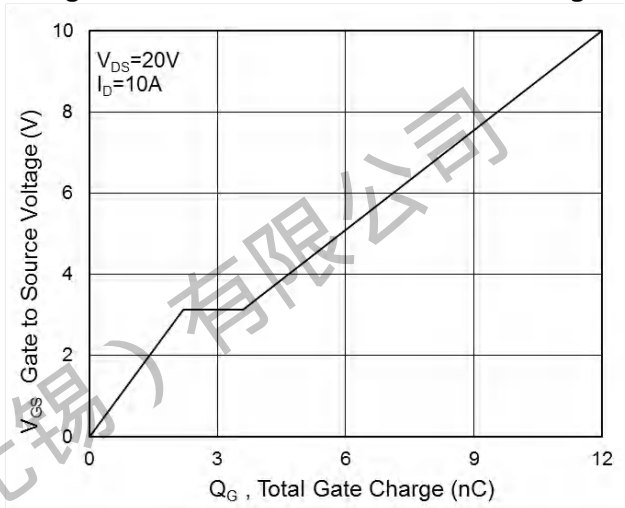


Fig.4 Gate-Charge characteristics

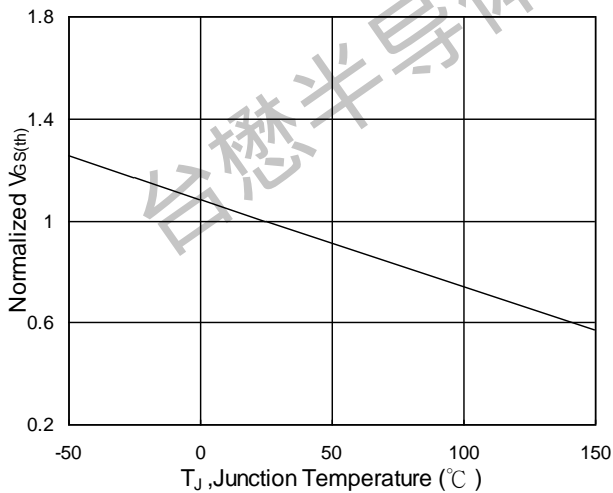


Fig.5 Normalized $V_{GS(th)}$ vs T_J

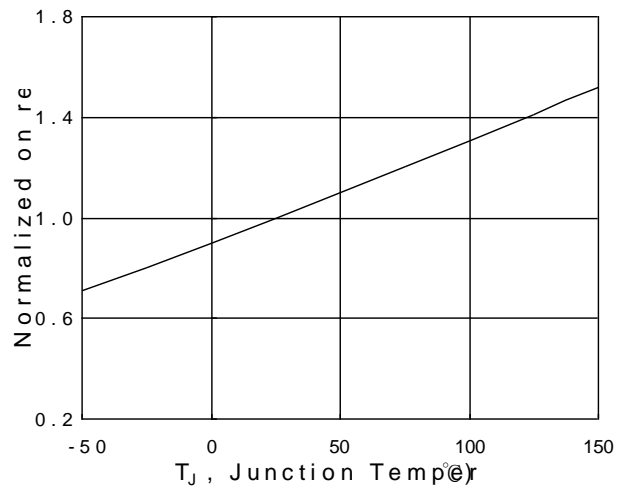


Fig.6 Normalized $R_{DS(on)}$ vs T_J

TM06G03S

N+P-Channel Enhancement Mode Mosfet

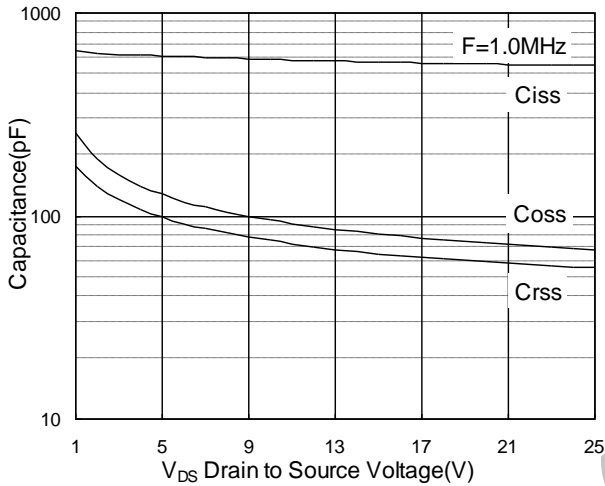


Fig.7 Capacitance

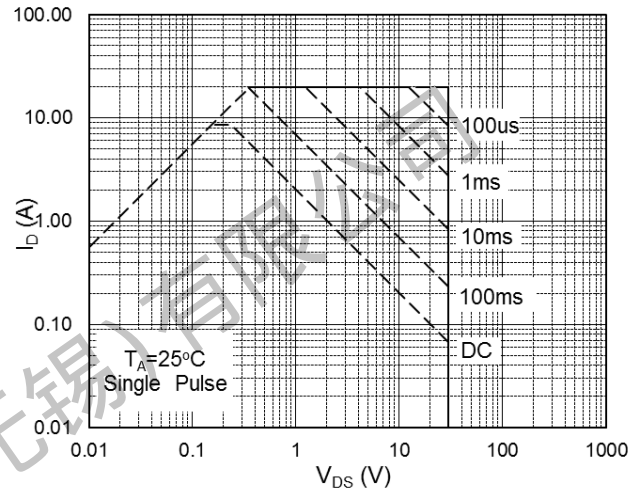


Fig.8 Safe Operating Area

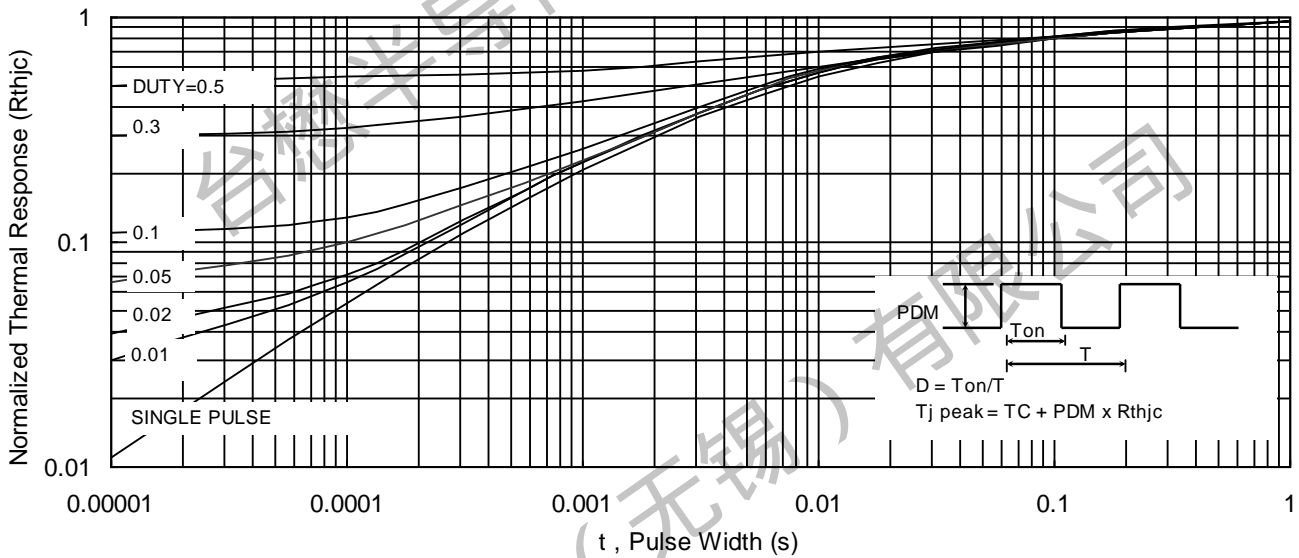


Fig.9 Normalized Maximum Transient Thermal Impedance

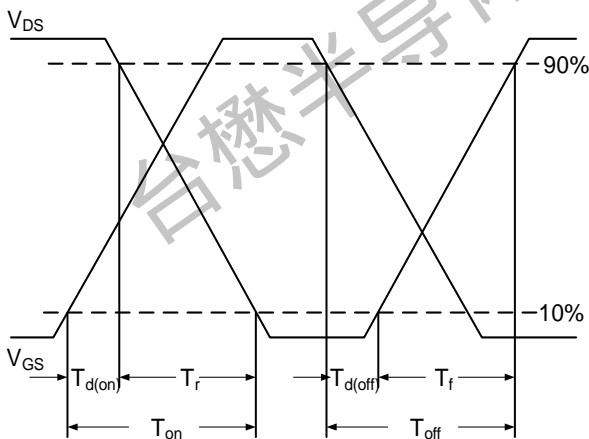


Fig.10 Switching Time Waveform

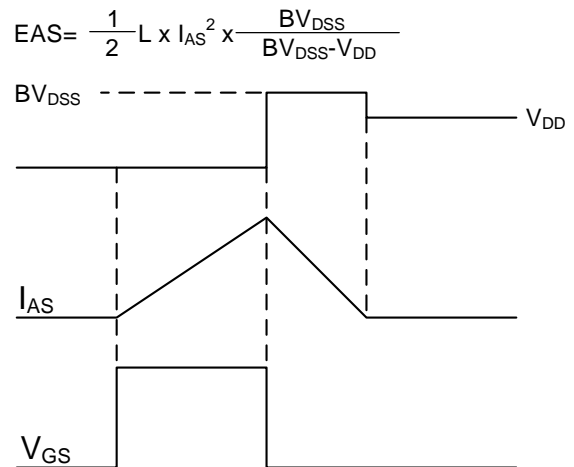


Fig.11 Unclamped Inductive Waveform



TM06G03S

N+P-Channel Enhancement Mode Mosfet

P-Channel Typical Characteristics

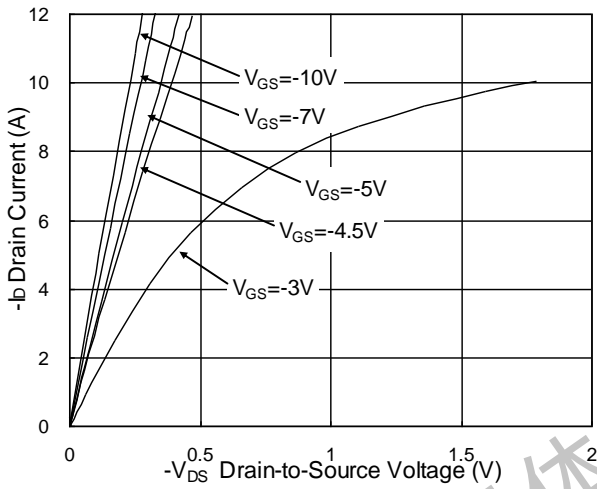


Fig.1 Typical Output Characteristics

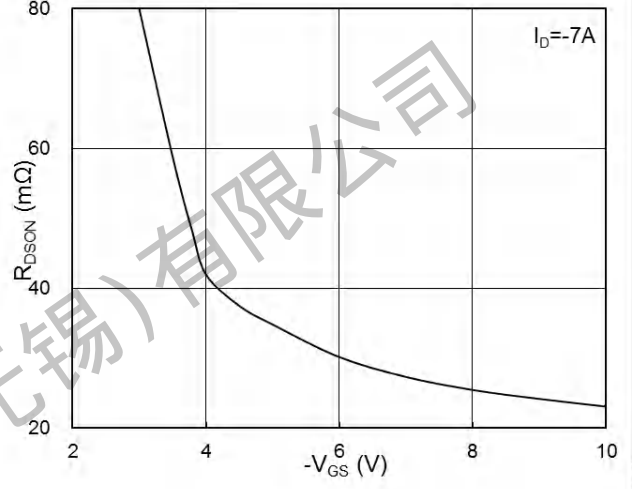


Fig.2 On-Resistance vs Gate-Source Voltage

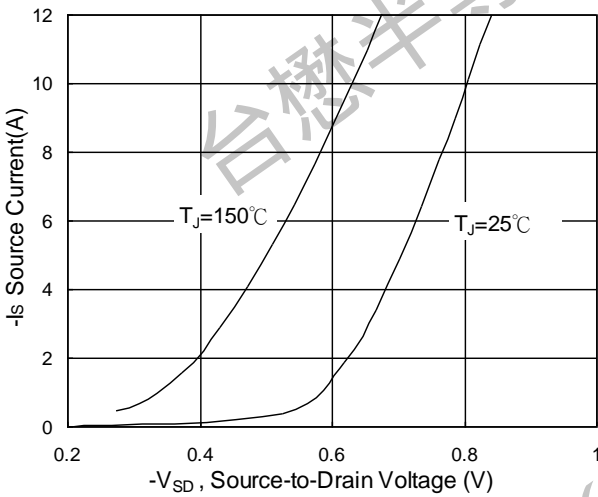


Fig.3 Forward Characteristics of Reverse

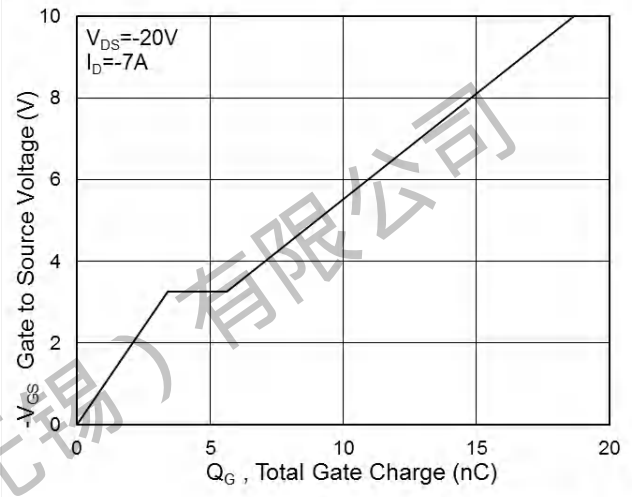


Fig.4 Gate-Charge Characteristics

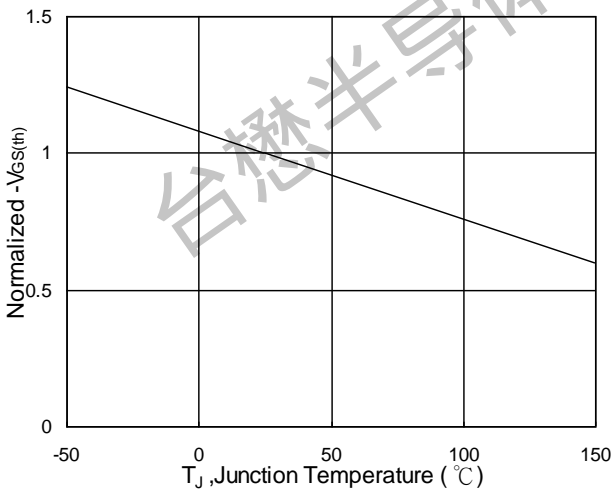


Fig.5 Normalized $V_{GS(th)}$ vs T_J

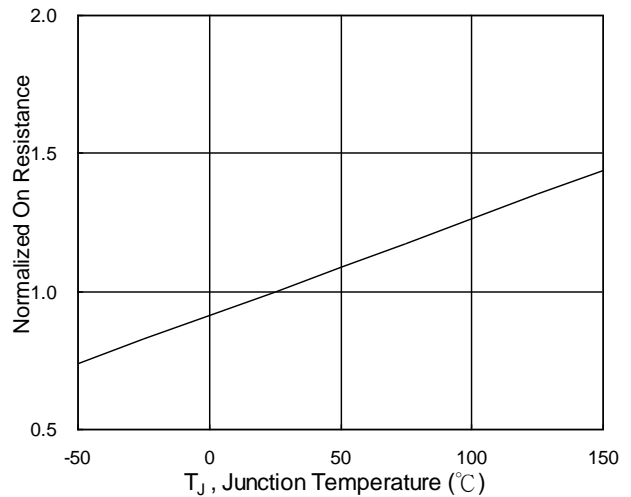


Fig.6 Normalized $R_{DS(on)}$ vs T_J



TM06G03S

N+P-Channel Enhancement Mode Mosfet

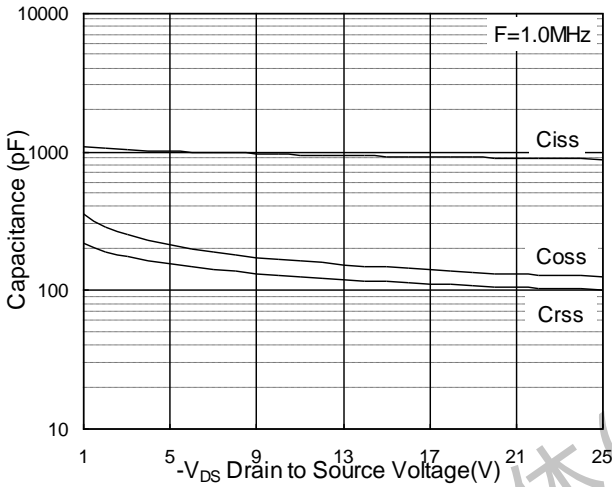


Fig.7 Capacitance

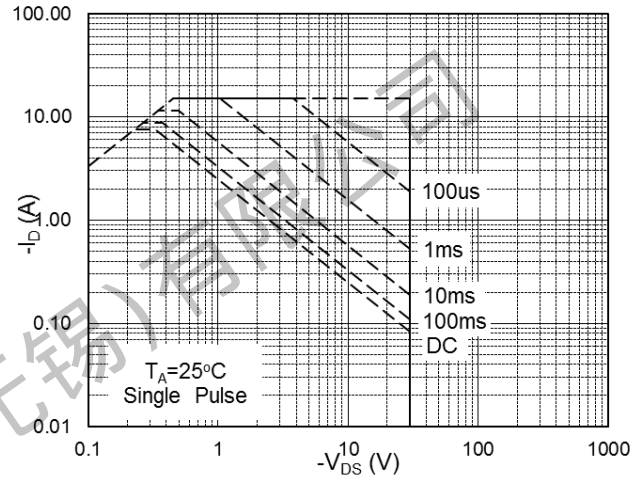


Fig.8 Safe Operating Area

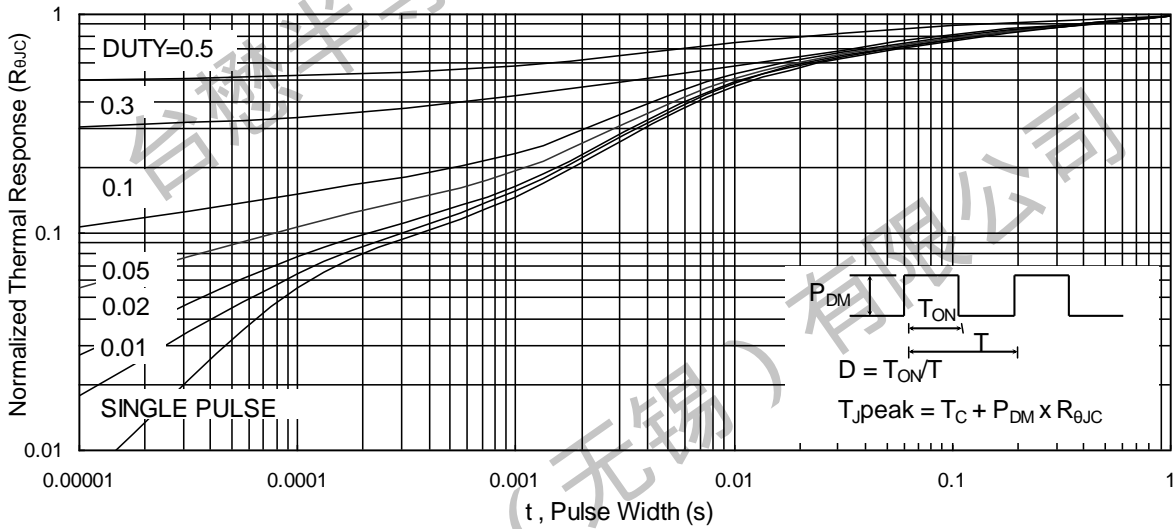


Fig.9 Normalized Maximum Transient Thermal Impedance

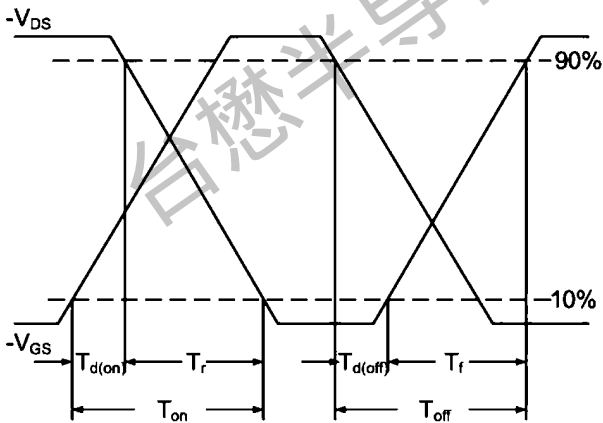


Fig.10 Switching Time Waveform

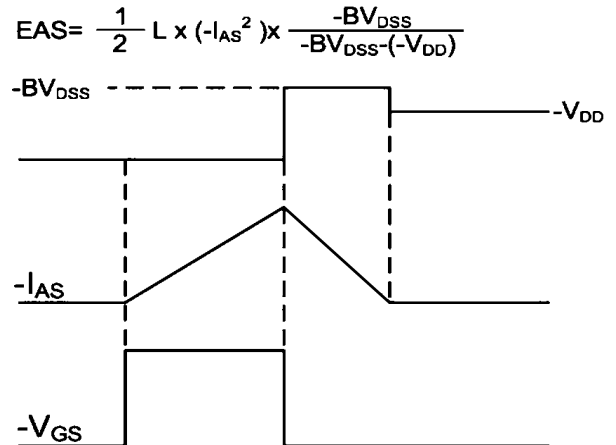
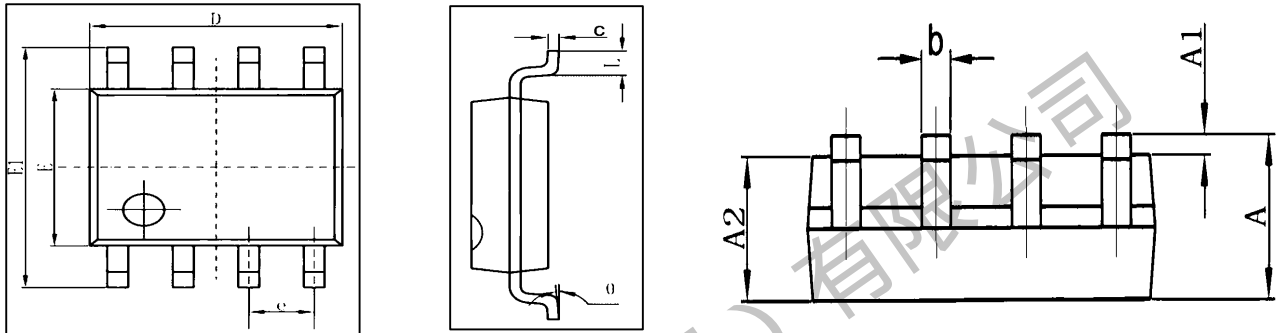


Fig.11 Unclamped Inductive Waveform

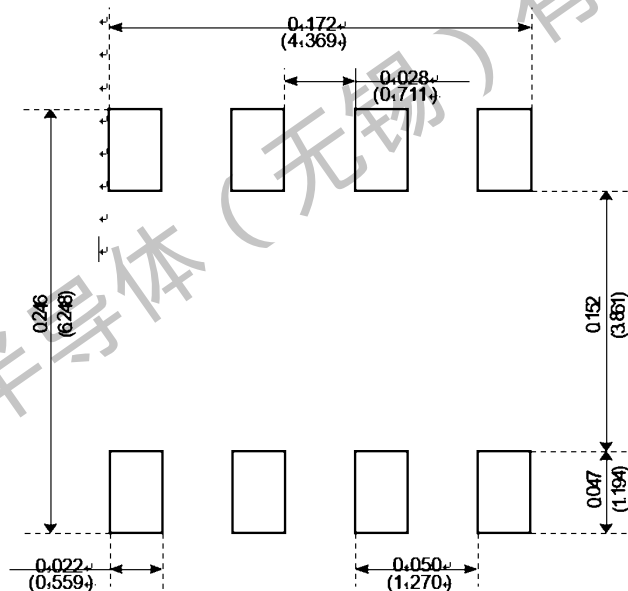
TM06G03S

N+P-Channel Enhancement Mode Mosfet

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°

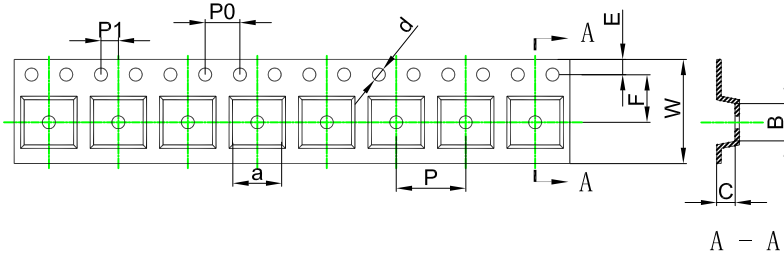


Recommended Minimum Pads

TM06G03S

N+P-Channel Enhancement Mode Mosfet

SOP-8L Embossed Carrier Tape



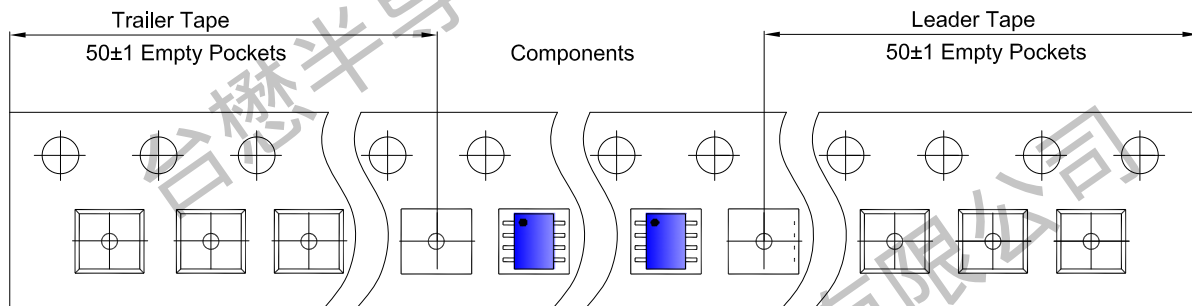
Packaging Description:

SOP-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

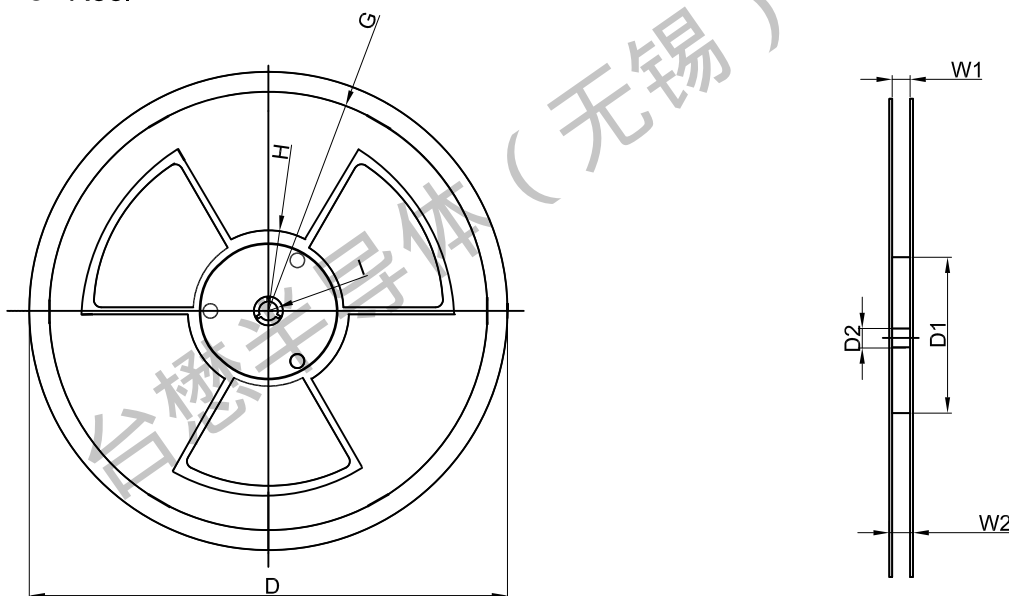
ALL DIM IN mm

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP-8L Tape Leader and Trailer



SOP-8L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13" Dia	Ø330.00	100.00	13.00	R135.00	R55.00	R6.50	12.00	14.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3,000 pcs	13 inch	6,000 pcs	370×355×52	48,000 pcs	400×360×368	

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Revision history:

Date	Rev	Description	Page
2023.05.19	23.05	Original	