

Description:

This N+P Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

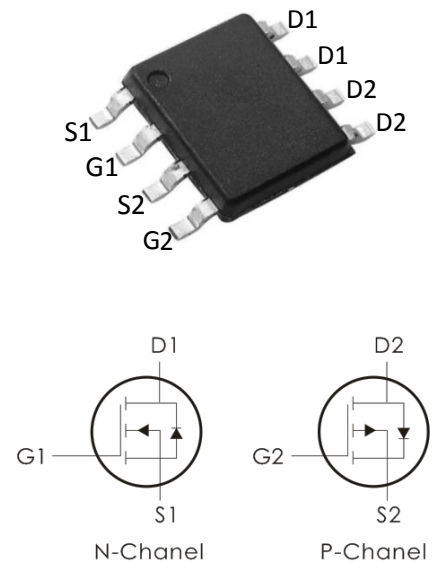
It can be used in a wide variety of applications.

Features:

N-Channel: $V_{DS}=100V, I_D=2.2A, R_{DS(on)} < 120m\Omega @ V_{GS}=10V$ (Typ: $80m\Omega$)

P-Channel: $V_{DS}=-100V, I_D=-1.8A, R_{DS(on)} < 200m\Omega @ V_{GS}=-10V$ (Typ: $160m\Omega$)

- 1) Low gate charge.
- 2) Green device available.
- 3) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 4) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DOS5521	S5521	SOP-8D	3000 pcs/Reel

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

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	100	-100	V
V_{GS}	Gate-Source Voltage	± 20	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ C$	2.2	-1.8	A
	Continuous Drain Current- $T_A=70^\circ C$	1.7	-1.4	
I_{DM}	Pulsed Drain Current ¹	13.2	-7.2	A
P_D	Power Dissipation	1.5	2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		$^\circ C$

Thermal Characteristics:

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	85	62.5	$^\circ C/W$

N-Channel Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =80V,T _J =25 °C	---	---	10	μ A
		V _{GS} =0V, V _{DS} =80V,T _J =55 °C	---	---	100	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.2	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =10V,I _D =2A	---	80	120	m Ω
		V _{GS} =4.5V,I _D =1A	---	85	140	
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =2A	---	10.2	---	S
R _G	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.1	---	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	1050	---	pF
C _{oss}	Output Capacitance		---	45	---	
C _{rss}	Reverse Transfer Capacitance		---	30	---	
Q _g	Gate Charge	V _{GS} =10V , V _{DS} =80V I _D =2A	---	18.4	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	
Q _{gd}	Gate-Drain Charge		---	3.1	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V , V _{GS} =10V , R _G =3.3, I _D =2A	---	5.6	---	ns
t _r	Rise Time		---	20	---	ns
t _{d(off)}	Turn-Off Delay Time		---	28	---	ns
t _f	Fall Time		---	24	---	ns
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V,I _S =1A,,T _J =25 °C	---	---	1.2	V
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V , Force Current	---	---	2.2	ns
I _{SM}	Pulsed Source Current ^{2,4}		---	---	13.2	nC

N-Channel Typical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

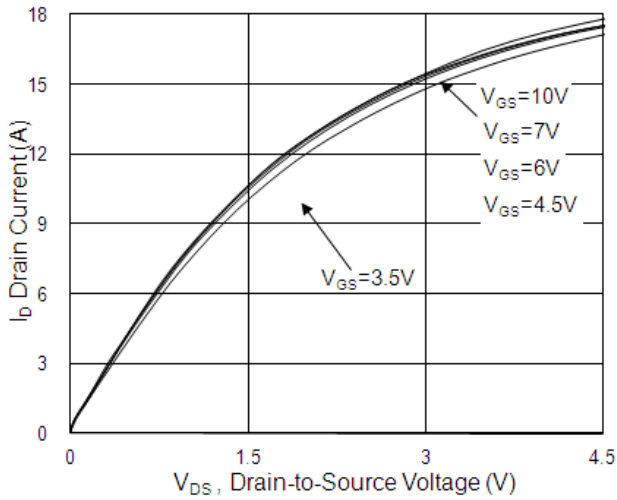


Fig.1 Typical Output Characteristics

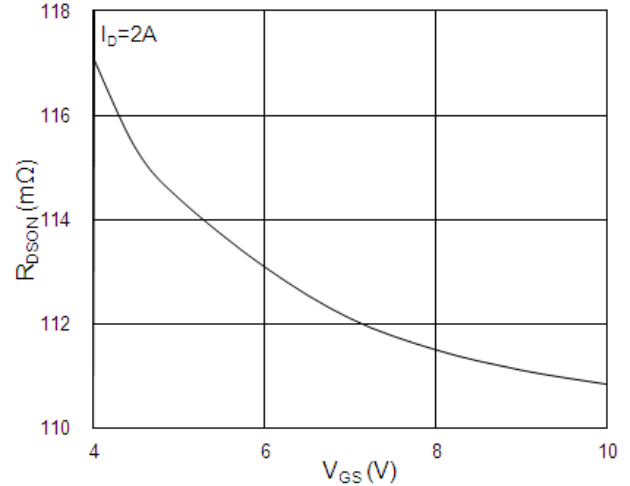


Fig.2 On-Resistance vs. Gate-Source

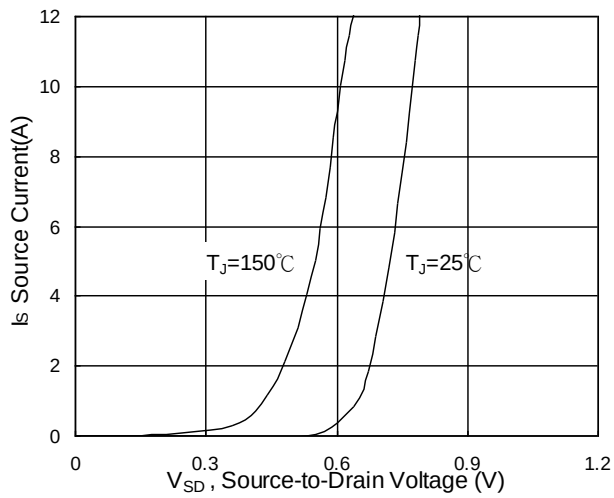


Fig.3 Forward Characteristics Of Reverse

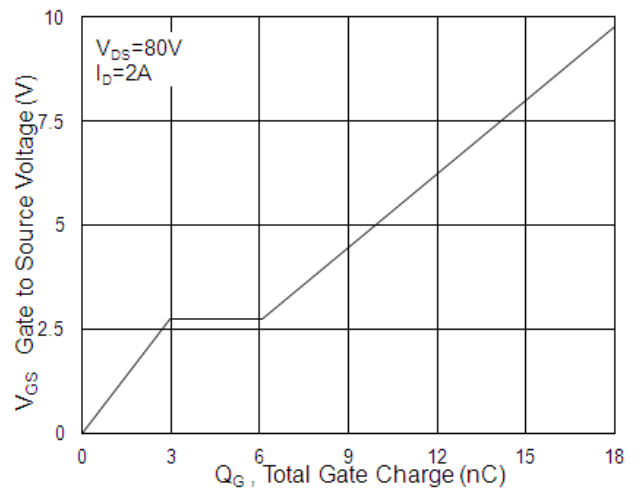


Fig.4 Gate-Charge Characteristics

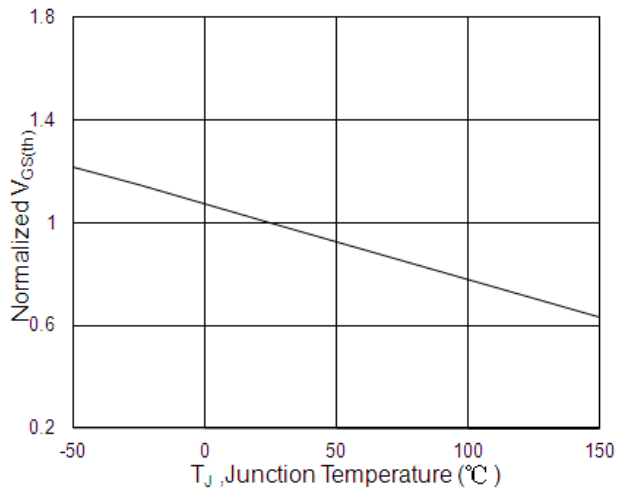


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

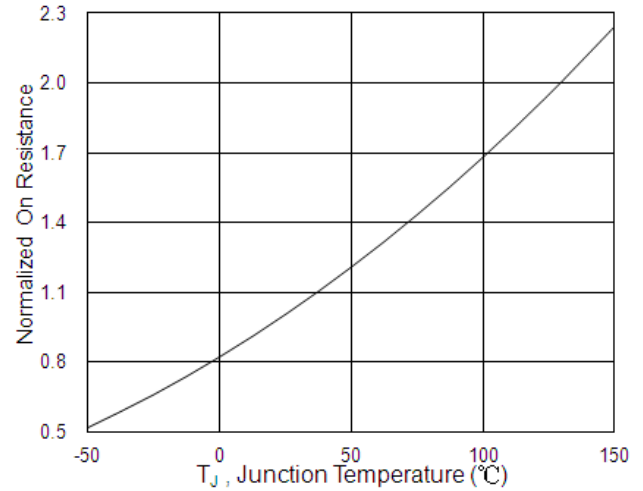


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

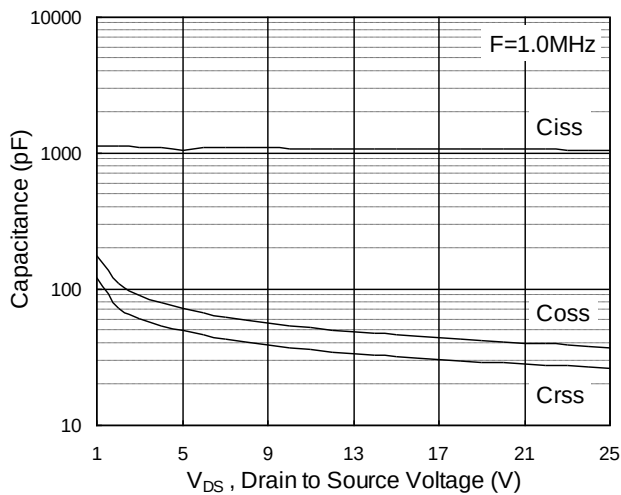


Fig.7 Capacitance

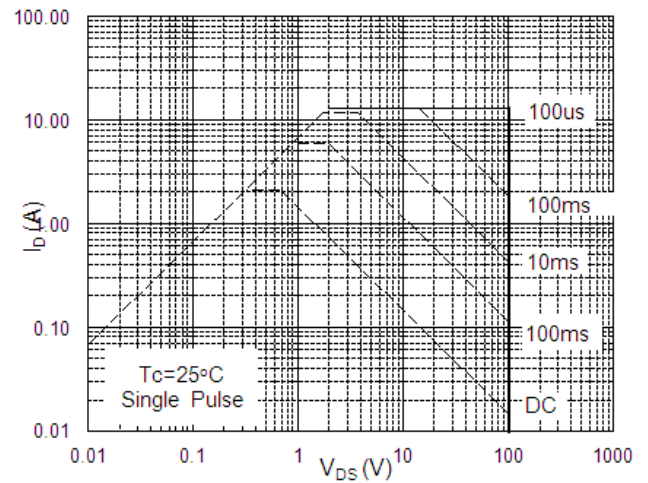


Fig.8 Safe Operating Area

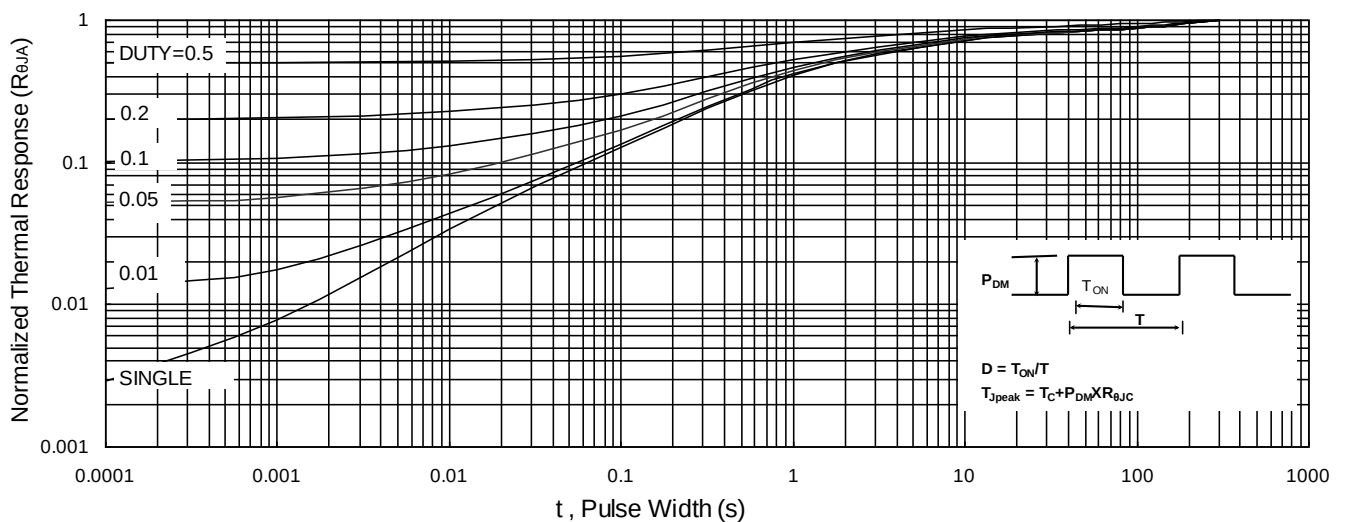


Fig.9 Normalized Maximum Transient Thermal Impedance

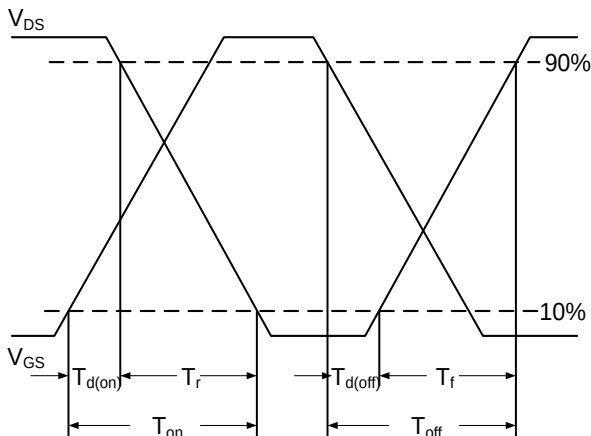


Fig.10 Switching Time Waveform

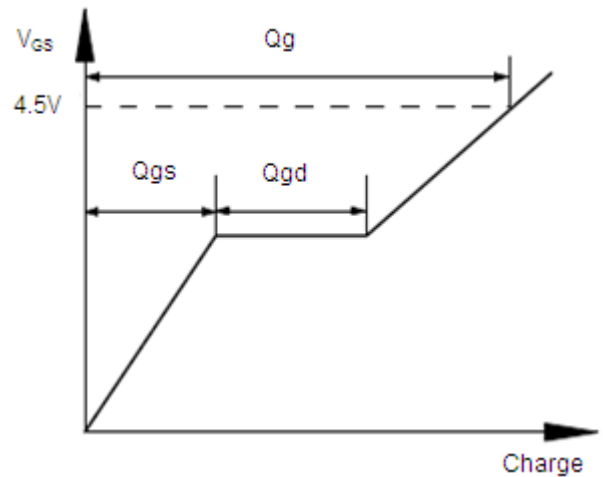


Fig.11 Gate Charge Waveform

P-Channel Electrical Characteristics: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	-100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=-100V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{GS}=0V, V_{DS}=-80V, T_J=125^\circ\text{C}$	---	---	-10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu A$	-1.2	-1.6	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=-10V, I_D=-1.8A$	---	160	200	m Ω
		$V_{GS}=-4.5V, I_D=-1.5A$	---	170	225	
G_{FS}	Forward Transconductance	$V_{DS}=-10V, I_D=-3A$	---	6.5	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=-50V, V_{GS}=0V, f=1\text{MHz}$	---	1455	2200	pF
C_{oss}	Output Capacitance		---	880	1300	
C_{rss}	Reverse Transfer Capacitance		---	58	85	
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	16	---	Ω

Switching Characteristics						
t_{d(on)}	Turn-On Delay Time ^{2,3}	V _{GS} =-10V,V _{DD} =-50V R _G =25 Ω ,I _D =-1.8A	---	18	36	ns
t_r	Rise Time ^{2,3}		---	8	16	ns
t_{d(off)}	Turn-Off Delay Time ^{2,3}		---	100	200	ns
t_f	Fall Time ^{2,3}		---	30	60	ns
Q_g	Total Gate Charge ^{2,3}	V _{GS} =-10V,V _{DS} =-80V,I _D =-1.8A	---	20	40	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	3.5	7	nC
Q_{gd}	Gate-Drain Charge ^{2,3}		---	4.6	9	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =-1A,T _J =25 °C	---	---	-1	V
I_S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	-1.8	V
I_{SM}	Pulsed Source Current		---	---	-3.6	V
T_{rr}	Reverse Recovery Time	V _R =-100V, I _S =-1A	---	13	---	ns
Q_{rr}	Reverse Recovery Charge	di/dt=100A/ μ s, T _J =25 °C	---	15	---	nC

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

P-Channel Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

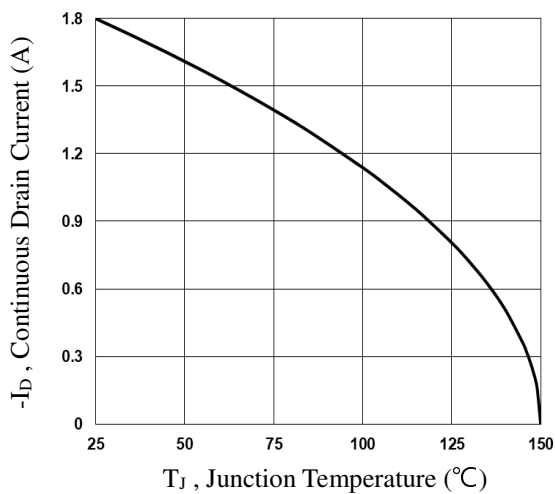


Fig.1 Continuous Drain Current vs. T_J

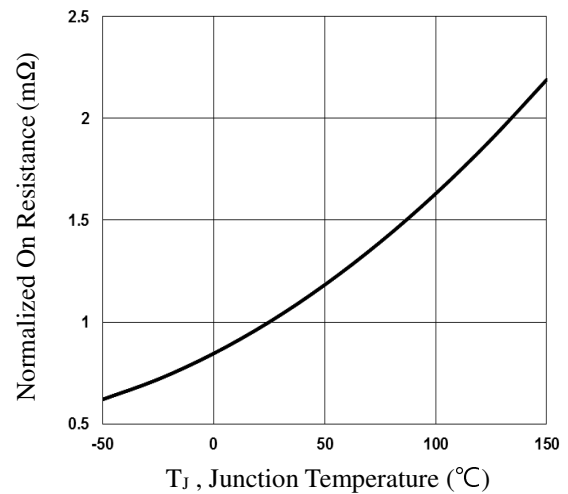


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

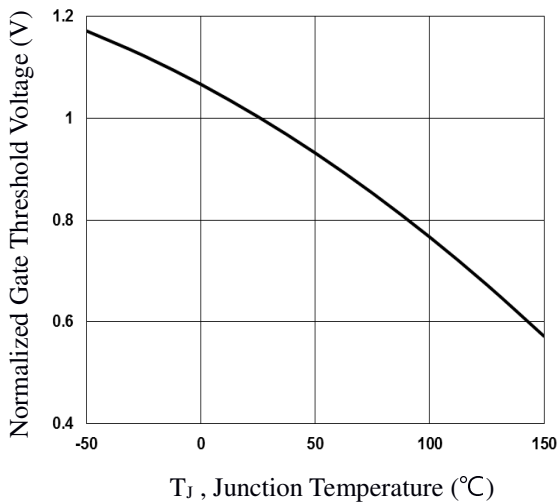


Fig.3 Normalized V_{th} vs. T_J

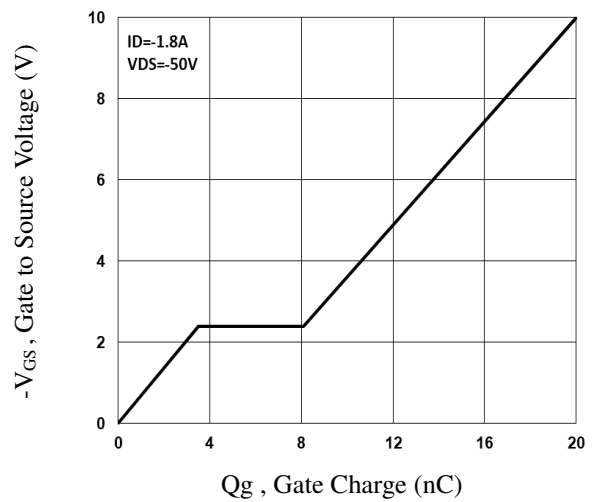


Fig.4 Gate Charge Waveform

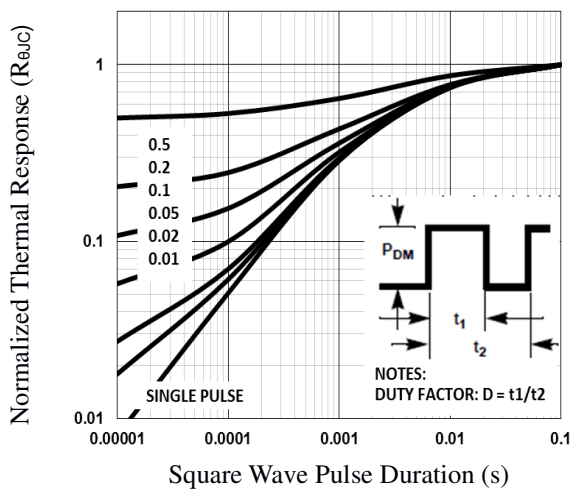


Fig.5 Normalized Transient Impedance

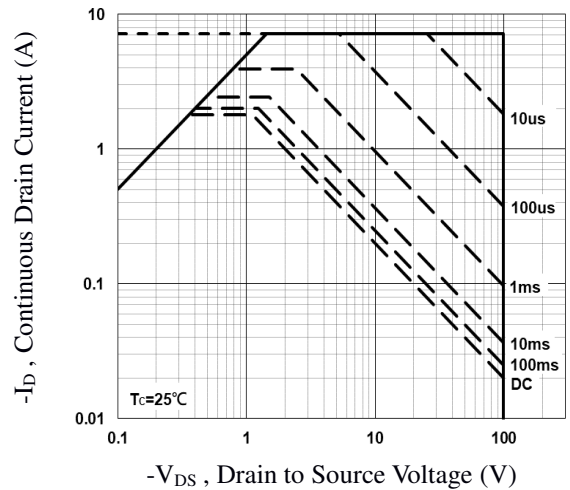


Fig.6 Maximum Safe Operation Area

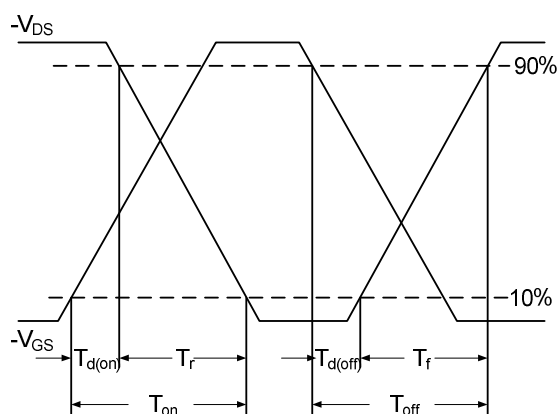


Fig.7 Switching Time Waveform

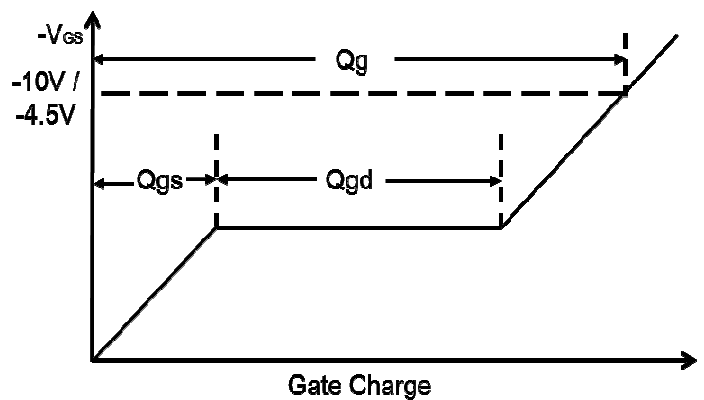
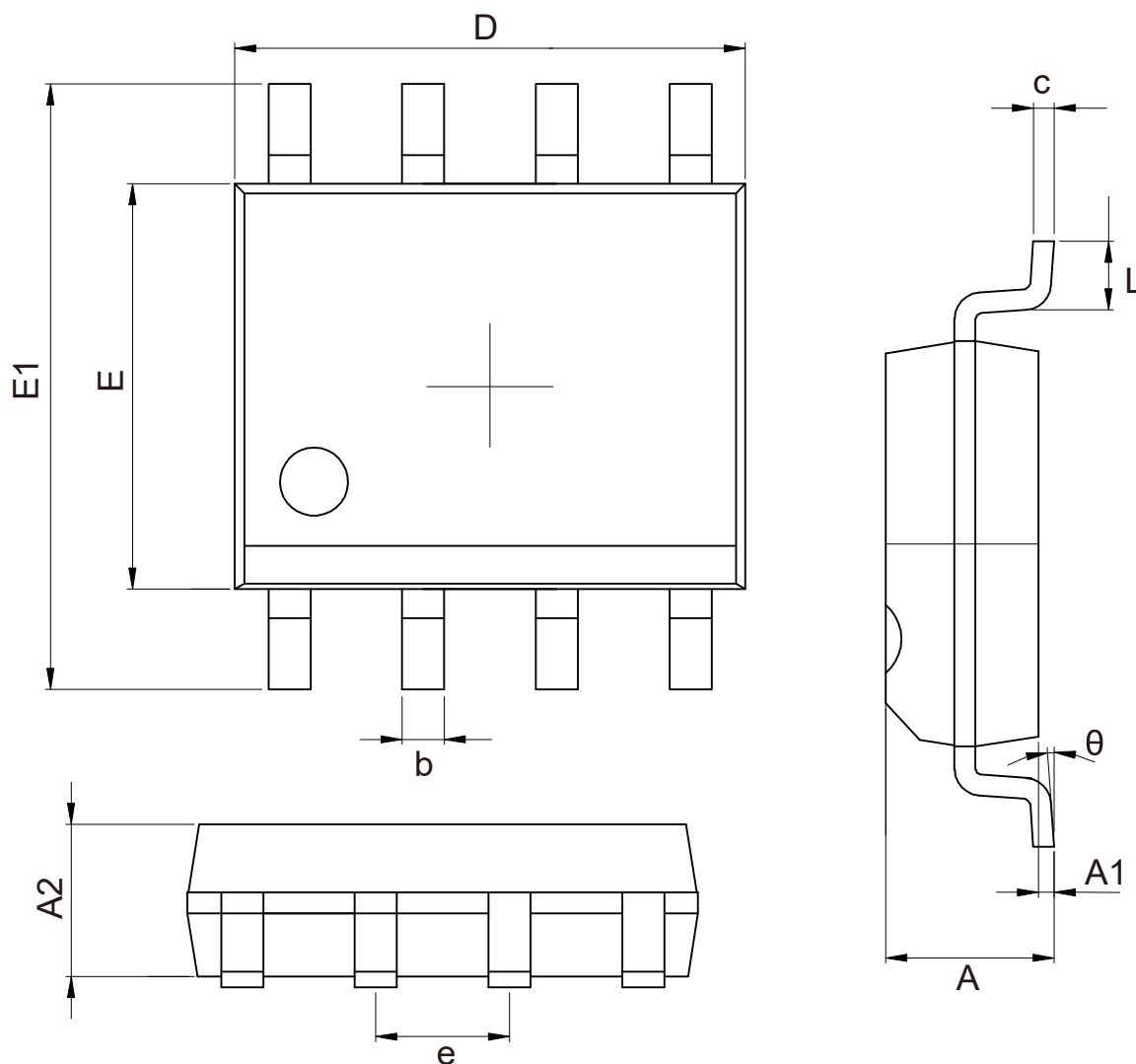


Fig.8 Gate Charge Waveform

SOP-8D Package Information:

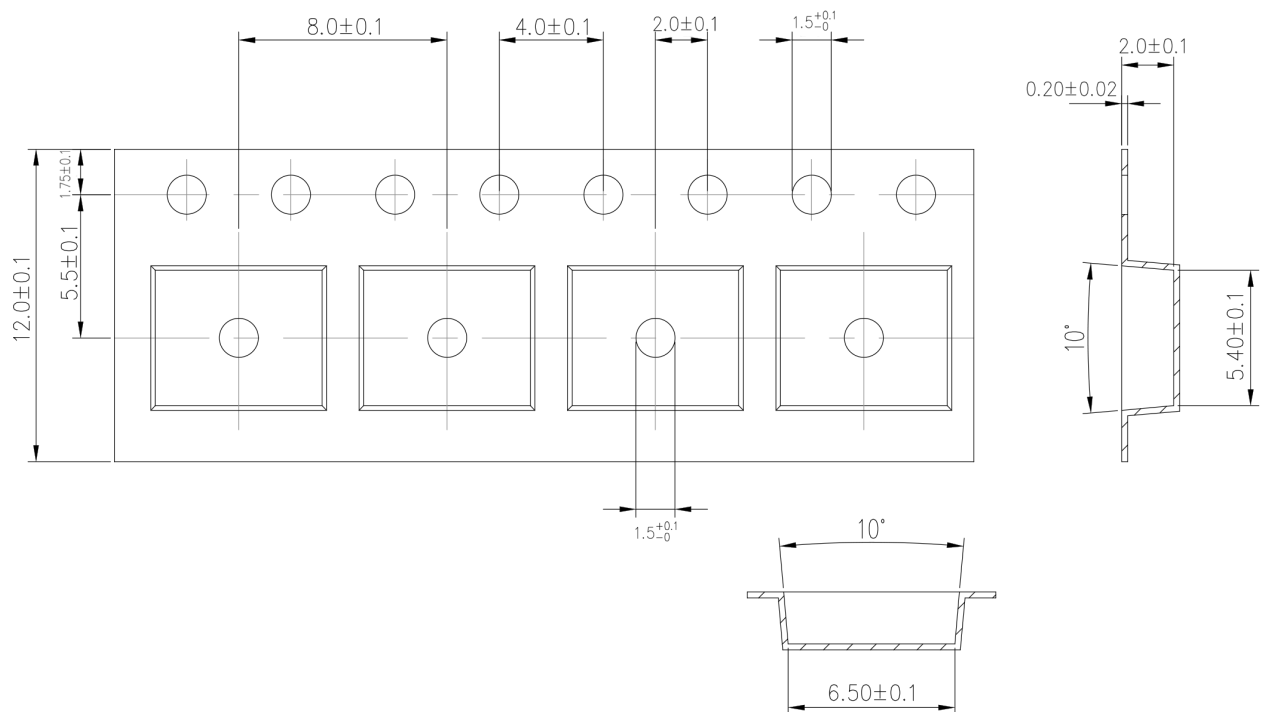
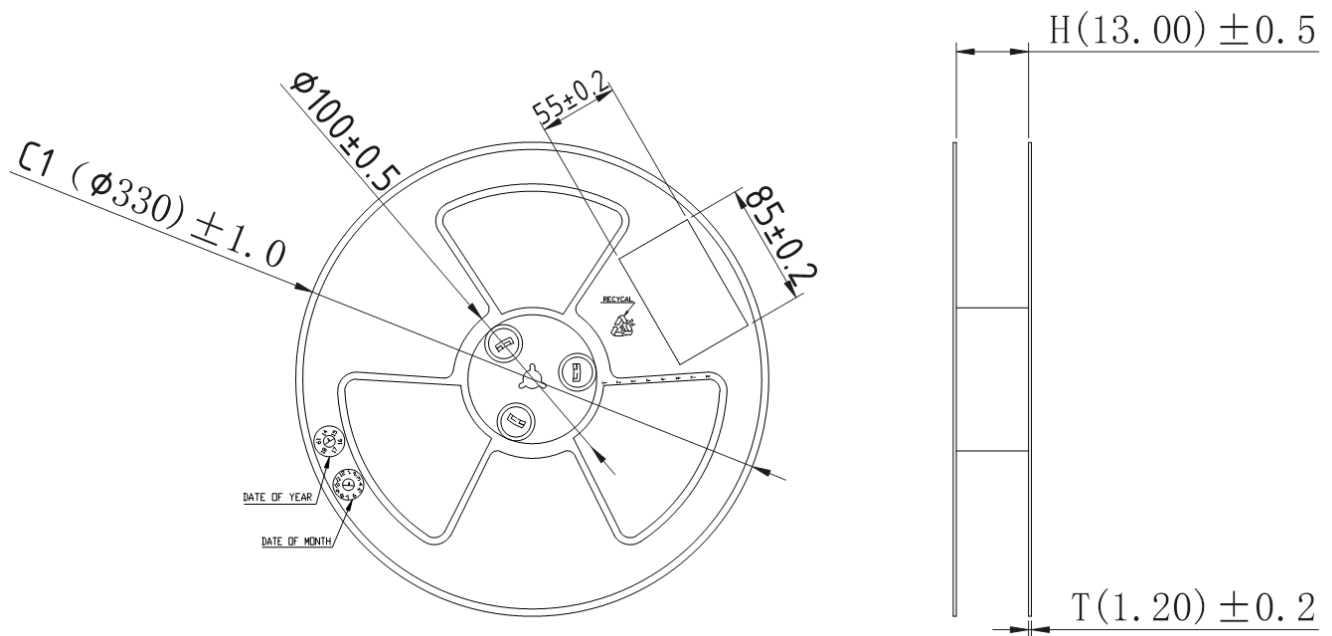


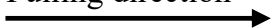
COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.350	—	1.750
A1	0.100	—	0.250
A2	1.350	—	1.550
b	0.330	—	0.510
c	0.170	—	0.250
D	4.700	—	5.100
E	3.800	3.900	4.000
E1	5.800	—	6.200
e	1.270BSC		
L	0.400	—	1.270
θ	0°	--	8°

Unit:mm

Tape & Reel Information

Dimensions in mm



Pulling direction 

Marking Information:

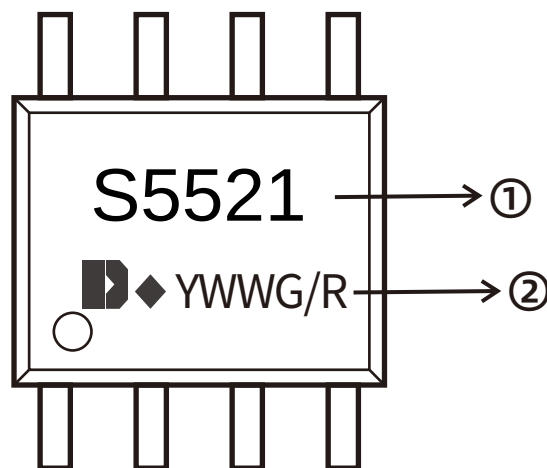
①. Part NO.

②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-04-29	Release of final version

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