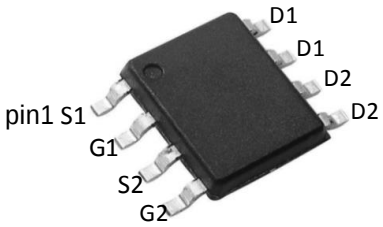
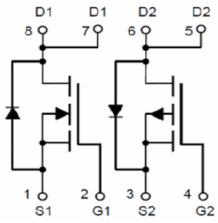
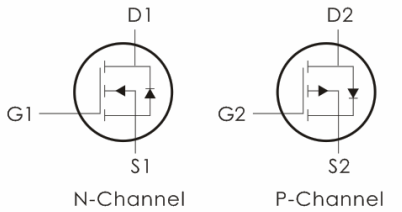
Description：

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}=60V,I_D=6A,$R_{DS(ON)}$<26mΩ @V_{GS}=10V（Typ：20mΩ）

P-Channel: V_{DS}=-60V,I_D=-9A,$R_{DS(ON)}$<35mΩ @V_{GS}=-10V（Typ：28.5mΩ）

1) Low gate charge.
2) Green device available.
3) Advanced high cell denity Trench technology for ultra low $R_{DS(ON)}$.
4) Excellent package for good heat dissipation.
5) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DOS4610B	S4610B	SOP-8	3000 pcs/Reel

Absolute Maximum Ratings：(T_A=25℃ unless otherwise noted)

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	60	-60	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Continuous Drain Current- T_A=25℃ [1]	6	-9	A
	Continuous Drain Current-T_A=100℃ [1]	3	-4.5	
I_{DM}	Pulsed Drain Current [2]	24	-36	A
E_{AS}	Single pulse avalanche energy [3]	35	80	mJ
P_D	Power Dissipation - T_A=25℃	1.4	1.4	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		℃

Thermal Characteristics：

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	90	90	℃/W

N-Channel Electrical Characteristics: (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=60V	---	---	1	μA
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=250μA	1.2	1.7	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=10A	---	20	26	mΩ
		V_{GS}=4.5V,I_D=5A	---	27	34	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	1030	---	pF
C_{oss}	Output Capacitance		---	68.2	---	
C_{rss}	Reverse Transfer Capacitance		---	63	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D=20A, R_{ENG}=3Ω ,V_{GS}=10V	---	7	---	ns
t_r	Rise Time		---	21	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	16	---	ns
t_f	Fall Time		---	24	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=30V, I_D=10A	---	25	---	nC
Q_{gs}	Gate-Source Charge		---	4.5	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	6.5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=20A	---	---	1.2	V
I_S	Continuous Drain Current	V_D=V_G=0V	---	---	5	A
I_{SM}	Pulsed Drain Current		---	---	20	A
Trr	Reverse Recovery Time	I_F=10A,T_J=25℃ dI/dt=100A/us	---	29	---	ns
Qrr	Reverse Recovery Charge		---	49	---	nC

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=30V,V_G=10V,L=0.1mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

N-Typical Characteristics： (T_A=25℃ unless otherwise noted)

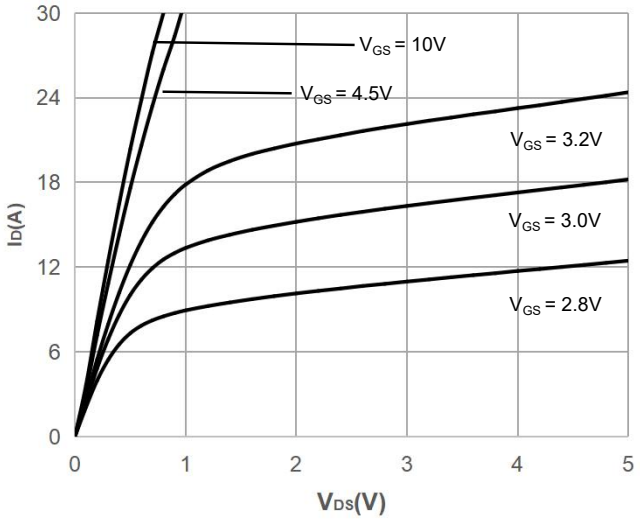


Figure 1: Output Characteristics

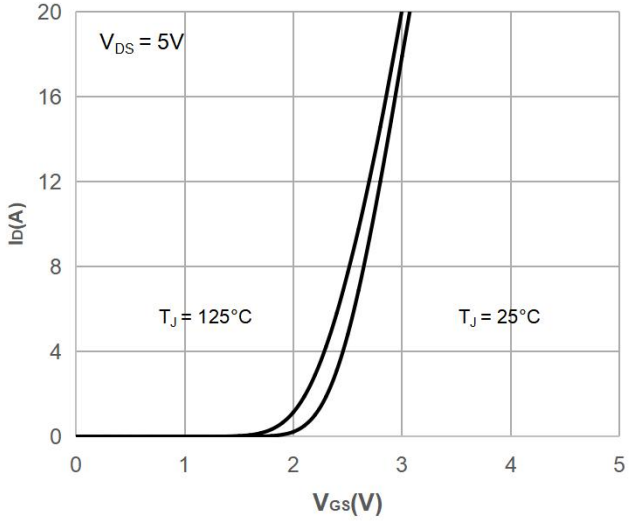


Figure 2: Typical Transfer Characteristics

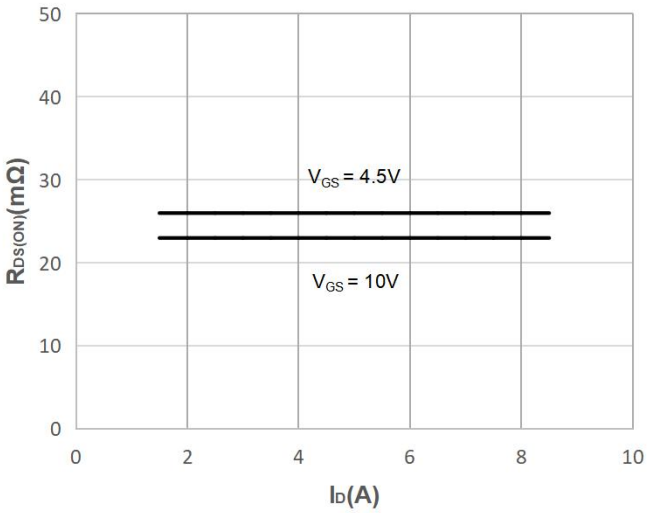


Figure 3: On-resistance vs. Drain Current

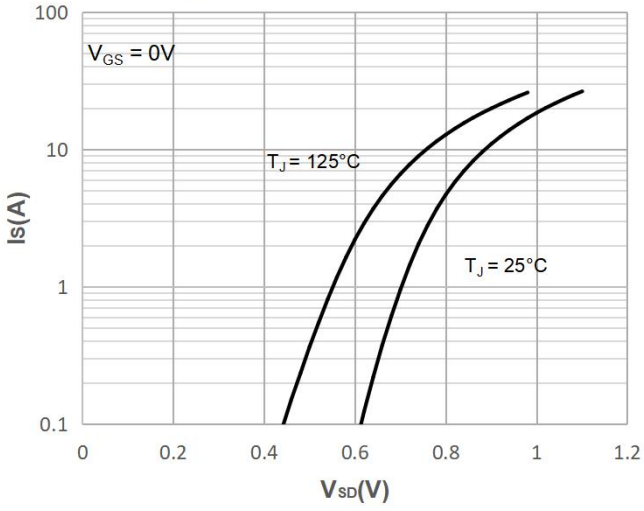


Figure 4: Body Diode Characteristics

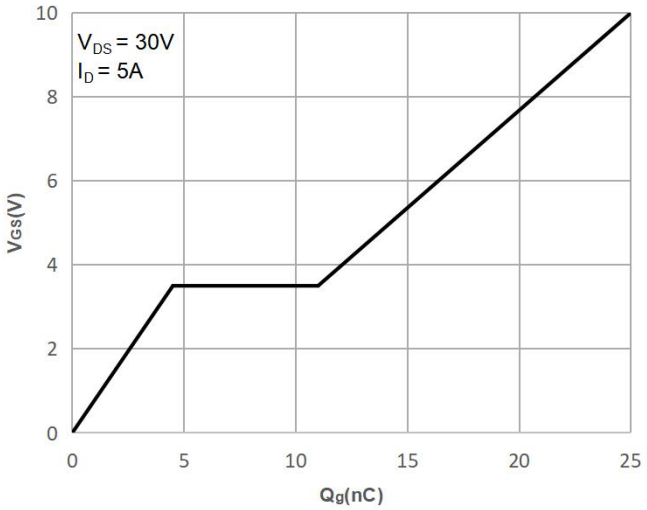


Figure 5: Gate Charge Characteristics

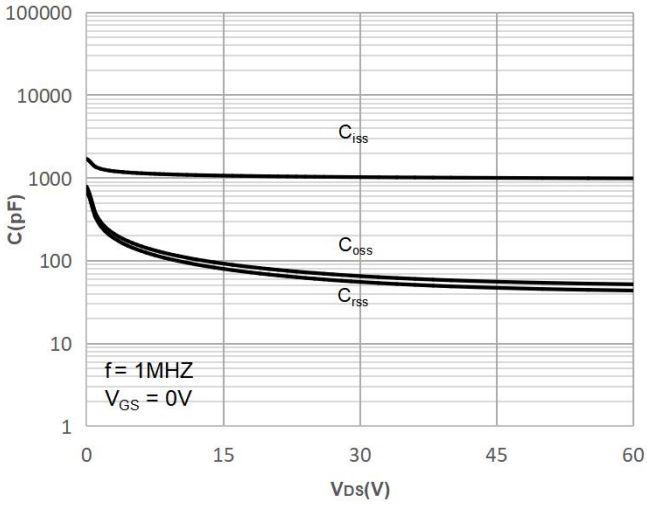


Figure 6: Capacitance Characteristics

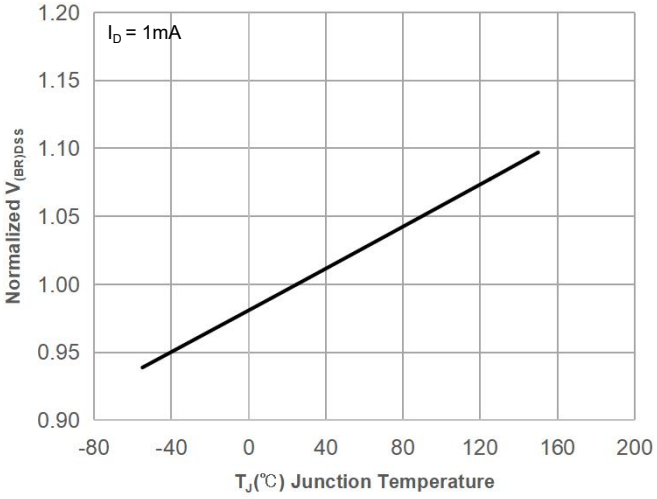


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

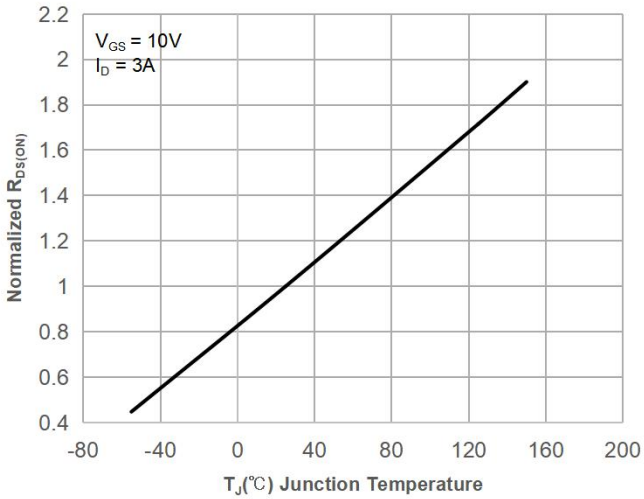


Figure 8: Normalized on Resistance vs. Junction Temperature

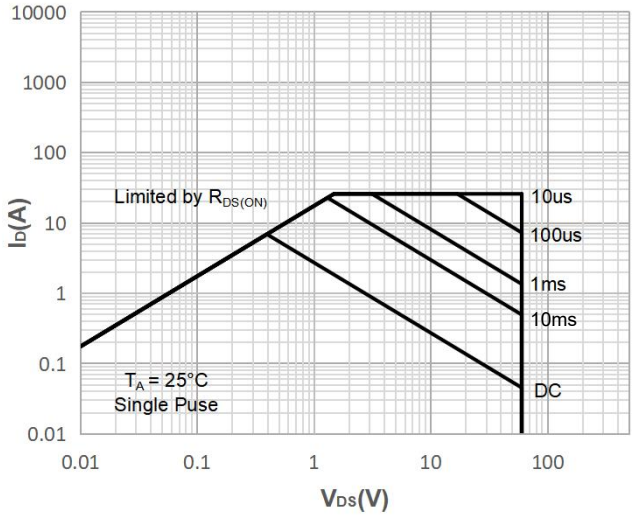


Figure 9: Maximum Safe Operating Area

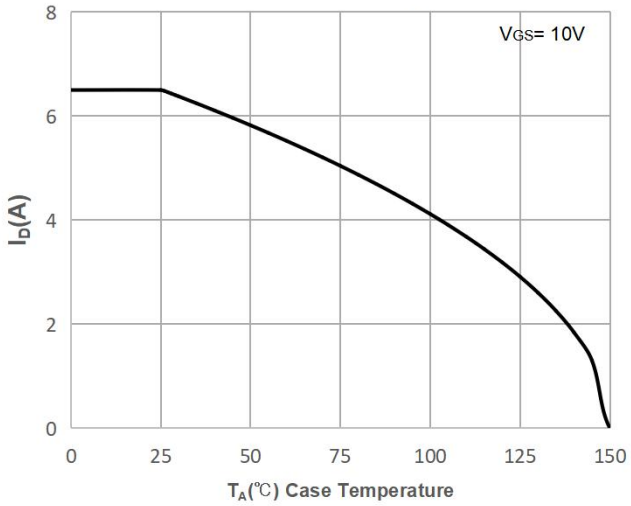


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

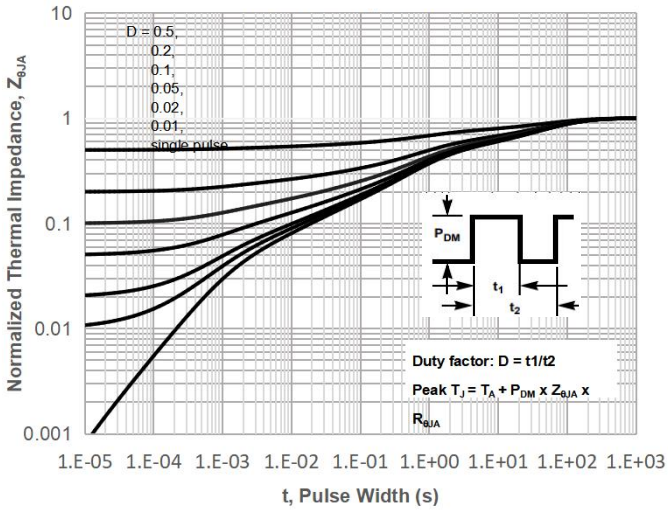


Figure 11: Normalized Maximum Transient Thermal Impedance

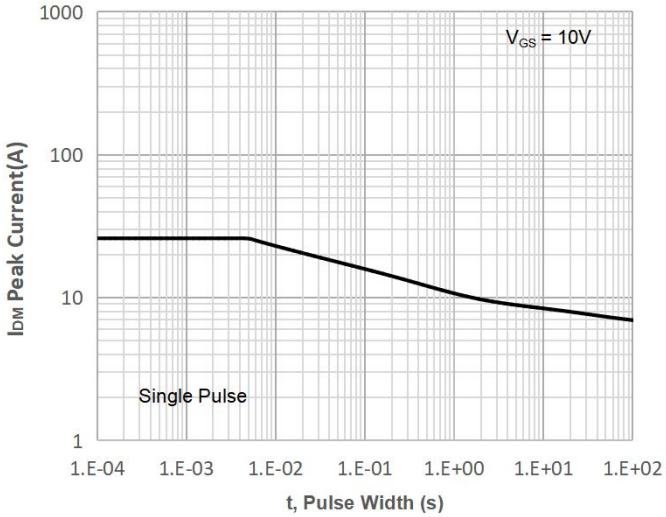


Figure 12: Peak Current Capacity

P-Channel Electrical Characteristics: (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-60V	---	---	-1	μA
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=250μA	-1	-1.69	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=-10V,I_D=-15A	---	28.5	35	mΩ
		V_{GS}=-4.5V,I_D=-10A	---	32.5	40	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V, f=1MHz	---	3500	---	pF
C_{oss}	Output Capacitance		---	133	---	
C_{rss}	Reverse Transfer Capacitance		---	97	---	
Switching Characteristics[4]						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}= -30V,I_D=-20A V_{GS}= -10V, R_{GEN}=3Ω	---	12	---	ns
t_r	Rise Time		---	9	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	63	---	ns
t_f	Fall Time		---	13	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V,V_{DS}=-30V, I_D=-20A	---	46	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	12	---	nC
Drain-Source Diode Characteristics						
I_S	Continuous Drain to Source Diode	VD=VG=0V	---	---	-7.5	A
I_{SM}	Pulsed Drain to Source Diode		---	---	-30	---
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-15A	---	---	-1.2	V
Trr	Reverse Recovery Time	I_F=-20A,T_J=25℃ dI/dt=100A/us	---	26	---	ns
Qrr	Reverse Recovery Charge		---	29	---	nC

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=-30V,V_G=-10V,L=0.1mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

P-Typical Characteristics: (T_A=25℃ unless otherwise noted)

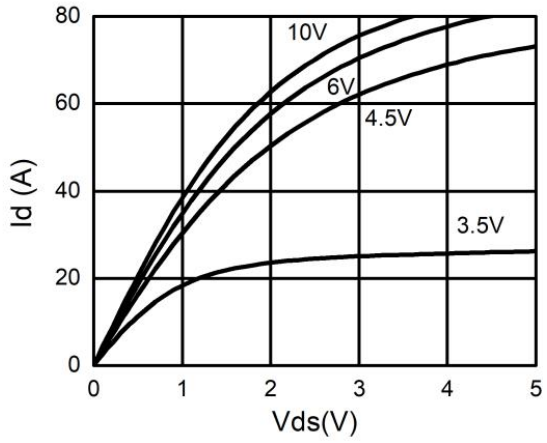


Figure 1. Output Characteristics

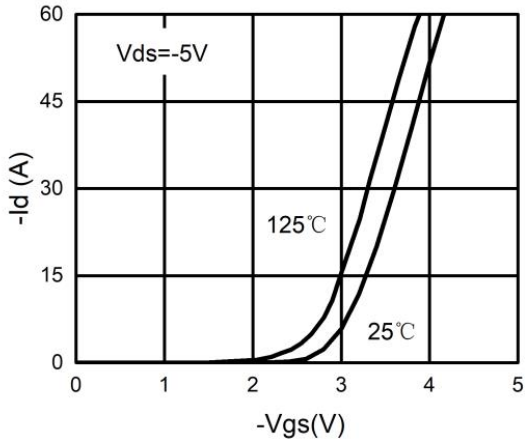


Figure 2. Transfer Characteristics

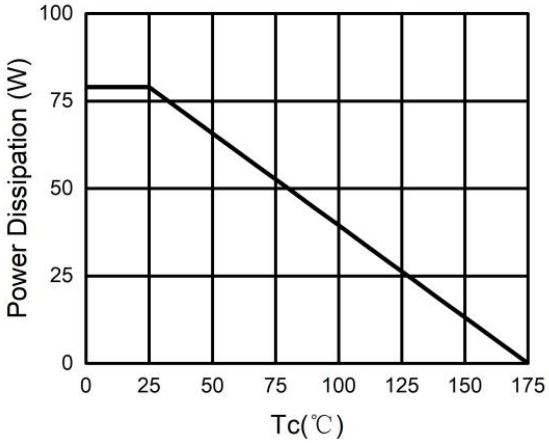


Figure 3. Power Dissipation

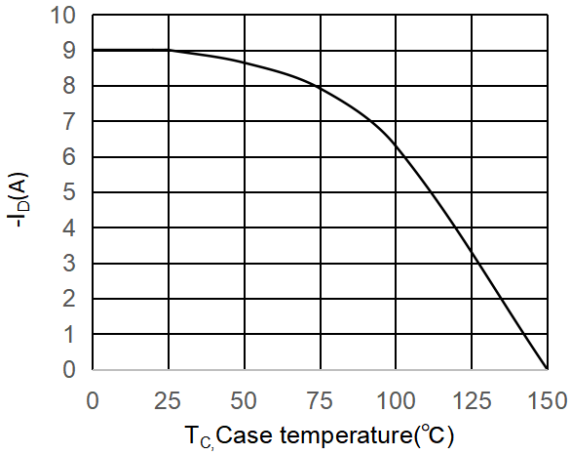


Figure 4. Drain Current

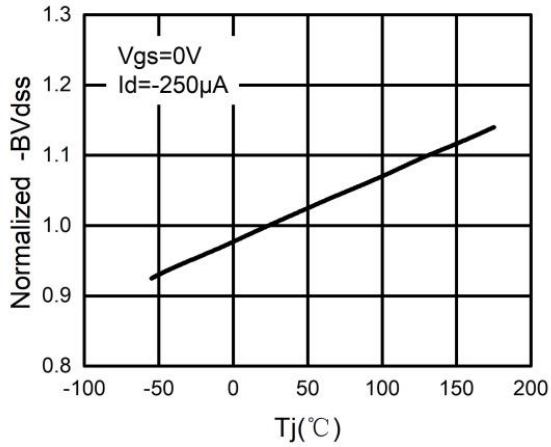


Figure 5. BV_{DSS} vs Junction Temperature

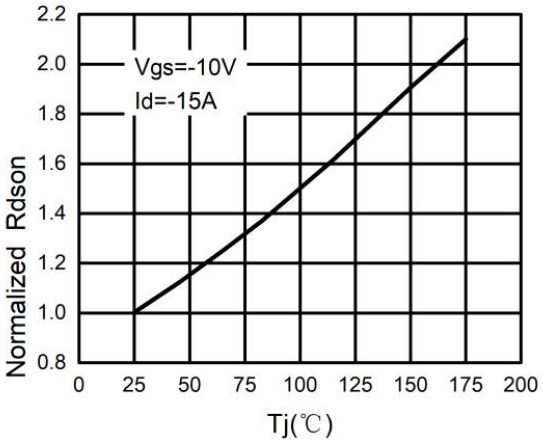


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

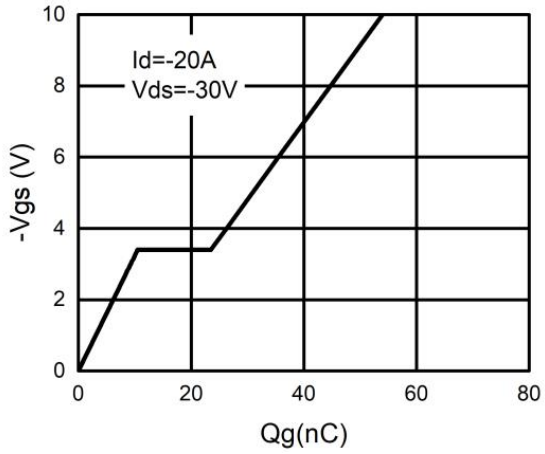


Figure 7. Gate Charge Waveforms

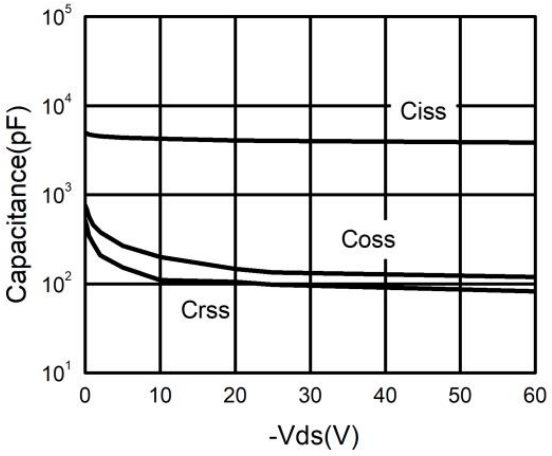


Figure 8. Capacitance

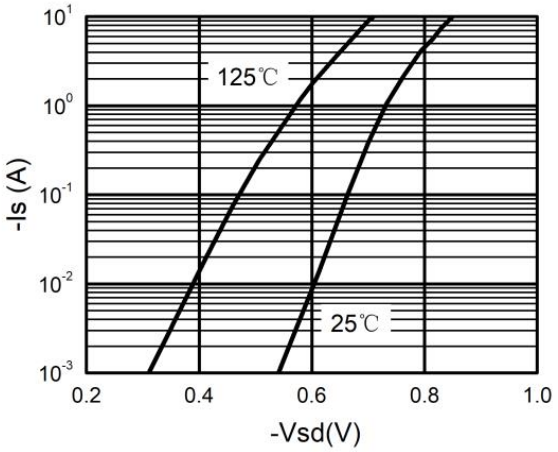


Figure 9. Body-Diode Characteristics

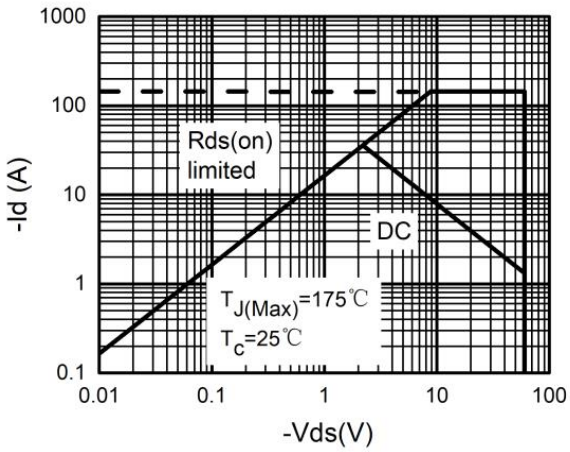
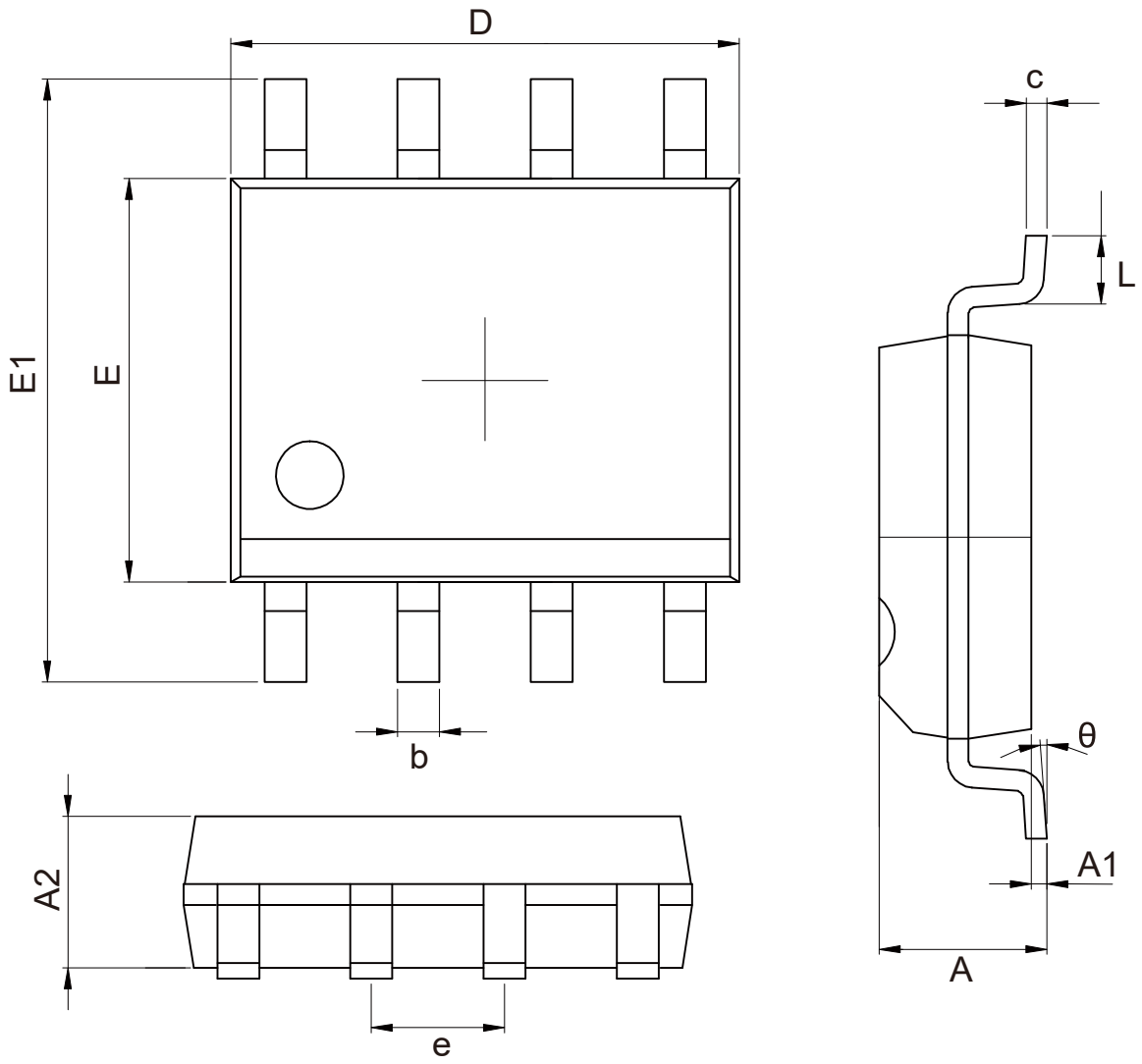


Figure 10. Maximum Safe Operating Area

SOP-8D Package Information：

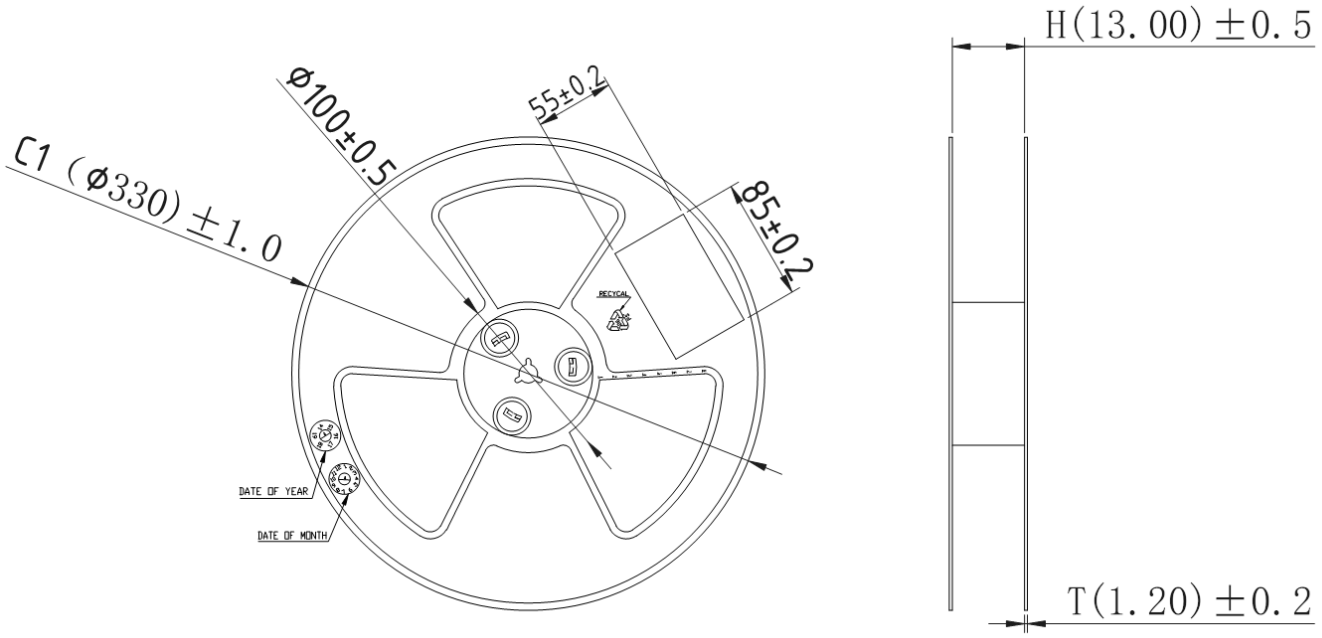


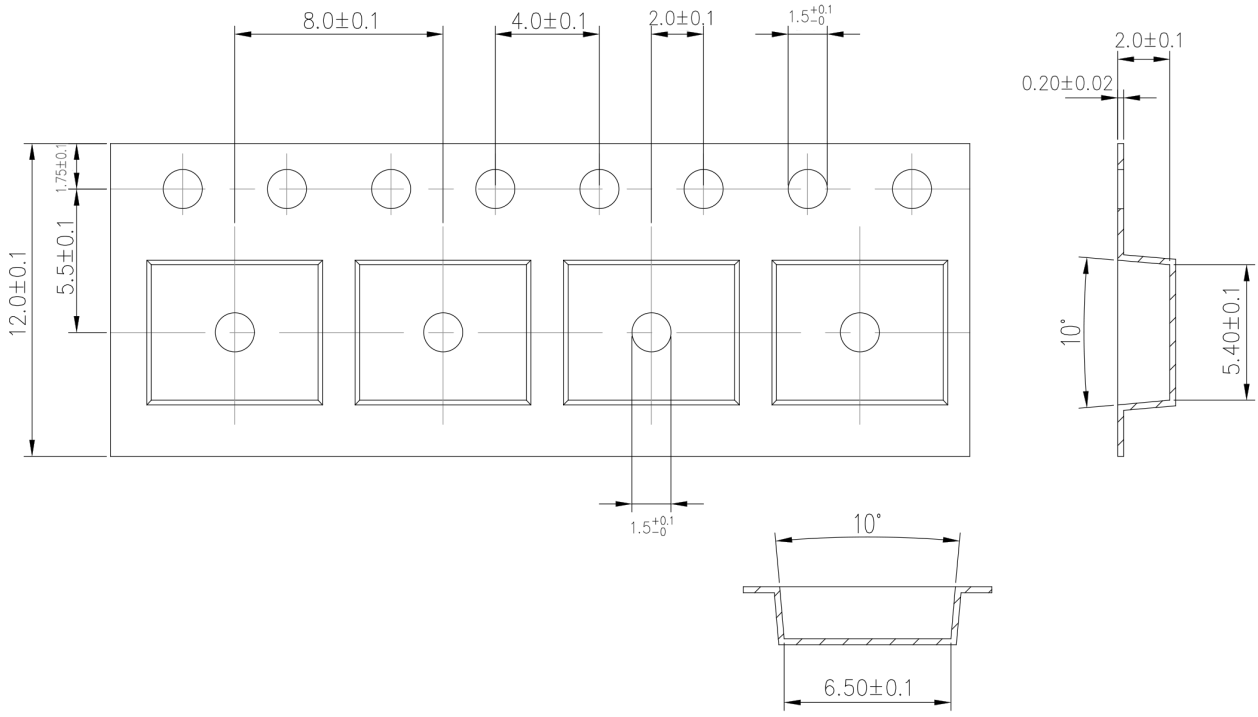
COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.350	——	1.750
A1	0.100	——	0.250
A2	1.350	——	1.550
b	0.330	——	0.510
c	0.170	——	0.250
D	4.700	——	5.100
E	3.800	3.900	4.000
E1	5.800	——	6.200
e	1.270BSC		
L	0.400	——	1.270
θ	0°	--	8°

Unit:mm

Tape & Reel Information

Dimensions in mm





Pulling direction

Marking Information：

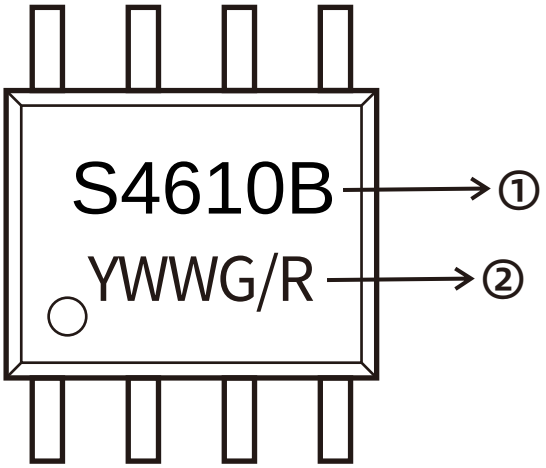
①. Part NO.

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)
1.2	2026-05-13	Release of final version

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