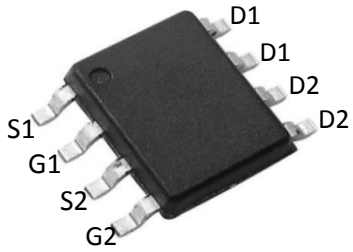
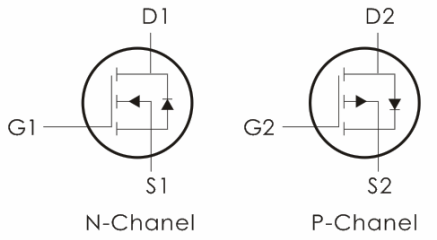
Description：

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}=40V,I_D=6.7A,$R_{DS(ON)}$<35mΩ @V_{GS}=10V

P-Channel: V_{DS}=-40V,I_D=-6A,$R_{DS(ON)}$<90mΩ @V_{GS}=-10V

1) High Power and current handing capability.
2) Lead free product is acquired.
3) Surface Mount Package.

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

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	40	-40	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Drain Current-Continuous	6.7	-6	A
$I_{DM\ (pluse)}$	Pulsed Drain Current [1]	26.8	-20	
P_D	Power Dissipation	2.5	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	-55 to +150	℃

Thermal Characteristics：

Channel	Symbol	Parameter	Max	Units
N	$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	50	℃/W
P	$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	50	

Package Marking and Ordering Information：

Part NO.	Marking	Package
DOS4614S	S4614S	SOP-8

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
ON/Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=40V	---	---	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	1.8	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=5A	---	28	35	mΩ
		V_{GS}=4.5V,I_D=3A	---	40	50	
G_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A	---	3.6	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	420	800	pF
C_{oss}	Output Capacitance		---	65	120	
C_{rss}	Reverse Transfer Capacitance		---	40	80	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2.3]	V_{DS}=20V, I_D=1A, V_{GS}=4.5V,R_{GEN}=25Ω	---	3.2	6	ns
t_r	Rise Time[2.3]		---	8.6	16	ns
$t_{d(off)}$	Turn-Off Delay Time[2.3]		---	18	36	ns
t_f	Fall Time[2.3]		---	6	12	ns
Q_g	Total Gate Charge[2.3]	V_{GS}=4.5V, V_{DS}=20V, I_D=3A	---	2.8	5.6	nC
Q_{gs}	Gate-Source Charge[2.3]		---	0.5	1	nC
Q_{gd}	Gate-Drain “Miller” Charge[2.3]		---	1.5	3	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[1]	V_{GS}=0V,I_S=1A	---	---	1	V
LS	Continuous Source Current	V_G=V_D=0V	---	---	6.7	A
LSM	Pulsed Source Current		---	---	26.8	A

Notes:

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

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

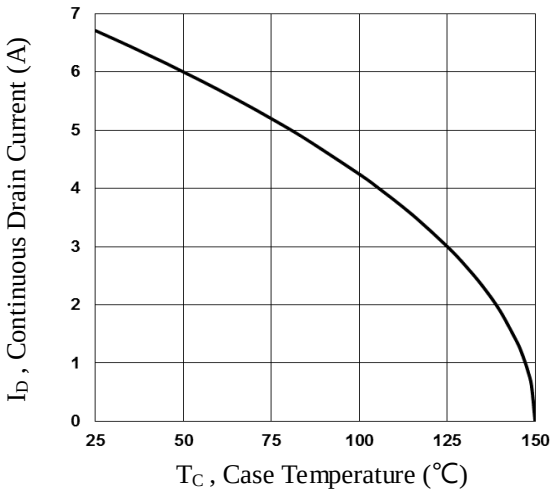


Fig.1 Continuous Drain Current vs. T_C

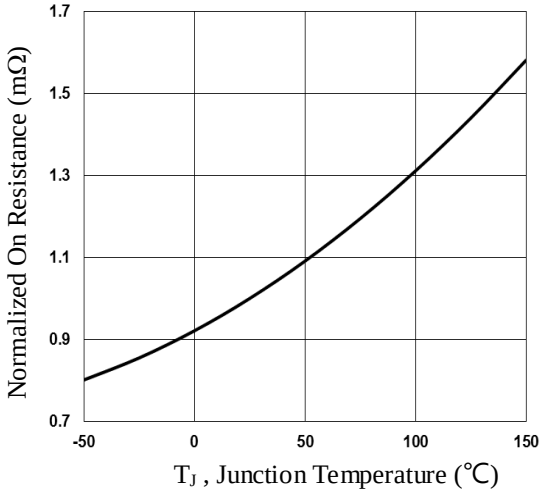


Fig.2 Normalized RDSON vs. T_J

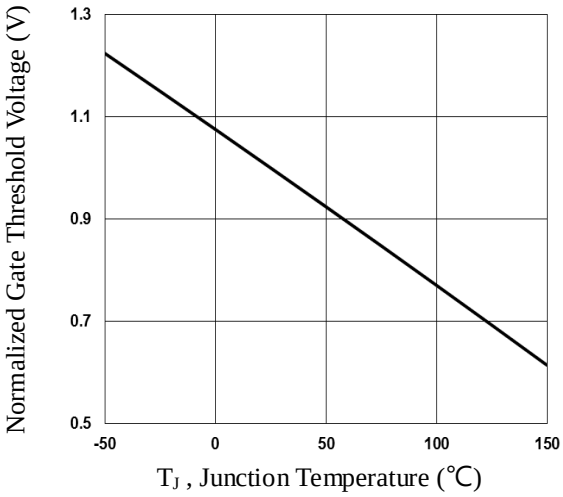


Fig.3 Normalized V_{th} vs. T_J

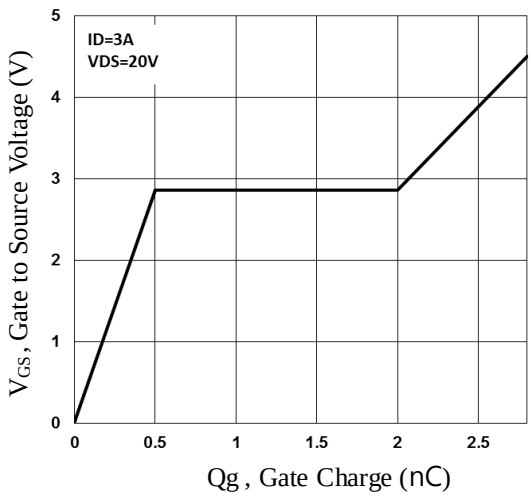


Fig.4 Gate Charge Waveform

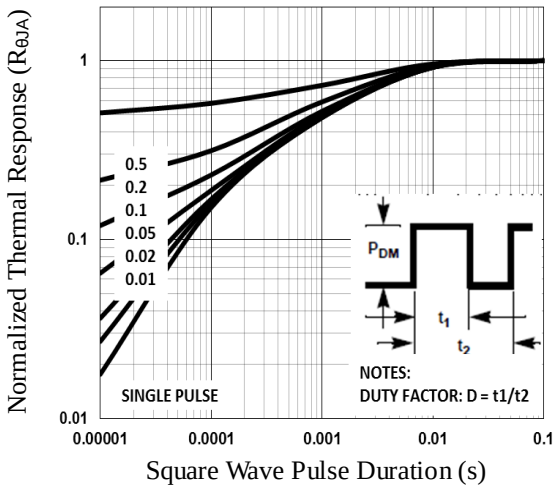


Fig.5 Normalized Transient Impedance

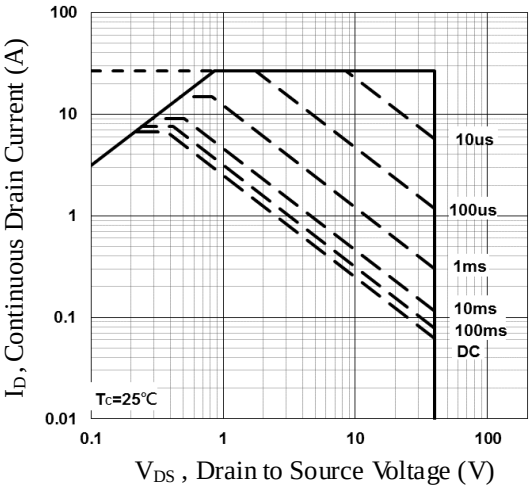


Fig.6 Maximum Safe Operation Area

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	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-40V	---	---	-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	-1.0	-1.6	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-3A	---	70	90	mΩ
		V_{GS}=-4.5V,I_D=-2A	---	90	125	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-20V, V_{GS}=0V, f=1MHz	---	570	---	pF
C_{oss}	Output Capacitance		---	50	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-20V,R_{GEN}=2.5Ω, V_{GS}=-10V,I_D=-5A	---	6.3	---	ns
t_r	Rise Time		---	13	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	33	---	ns
t_f	Fall Time		---	17	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-20V, I_D=-3A	---	7	---	nC
Q_{gs}	Gate-Source Charge		---	1.3	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	1.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Forward Voltage	V_{GS}=0V,I_S=-5A	---	-0.8	-1.2	V
Trr	Reverse Recovery Time	VGS=0V, IS= -5A,	----	23	---	nS
Qrr	Reverse Recovery Time	di/dt=100A/μs	---	25.2	---	nC
LS	Continuous Source Current	V_G=V_D=0V	---	---	-6	A
LSM	Pulsed Source Current		---	---	-20	A

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

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

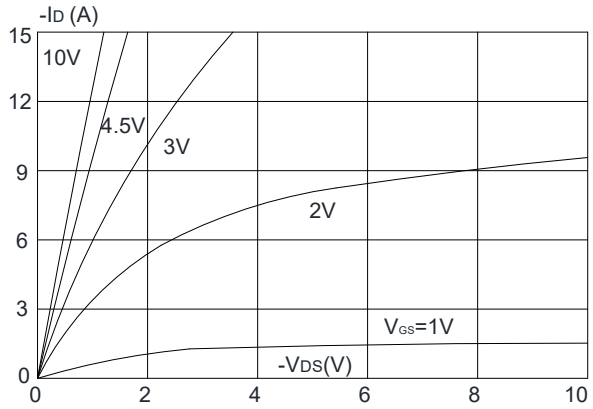


Figure1: Output Characteristics

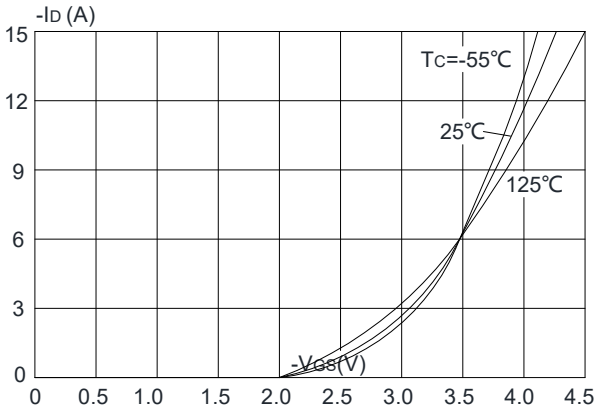


Figure 2: Typical Transfer Characteristics

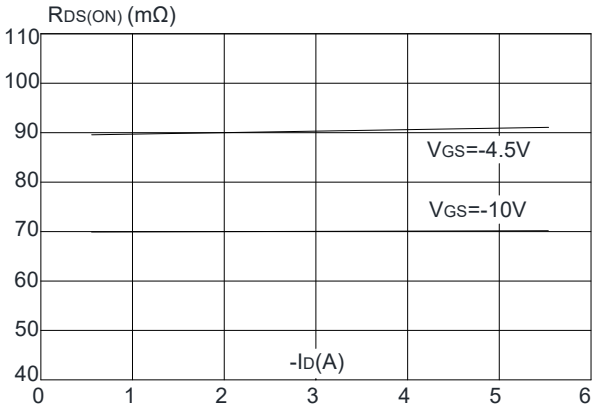


Figure 3: On-resistance vs. Drain Current

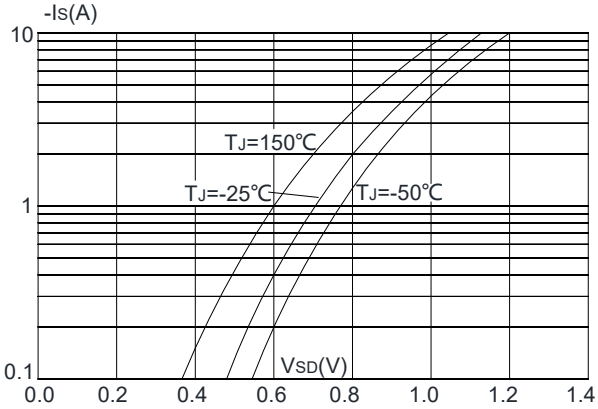


Figure 4: Body Diode Characteristics

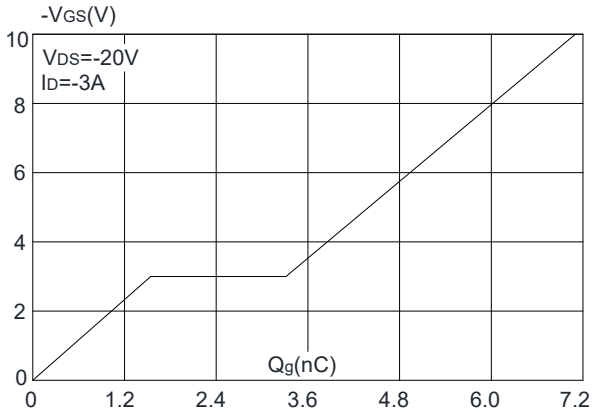


Figure 5: Gate Charge Characteristics

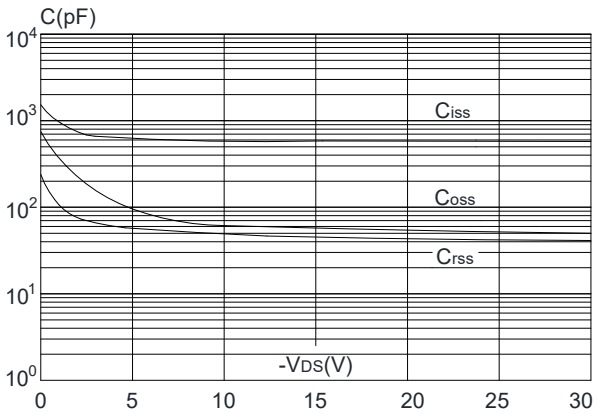


Figure 6: Capacitance Characteristics

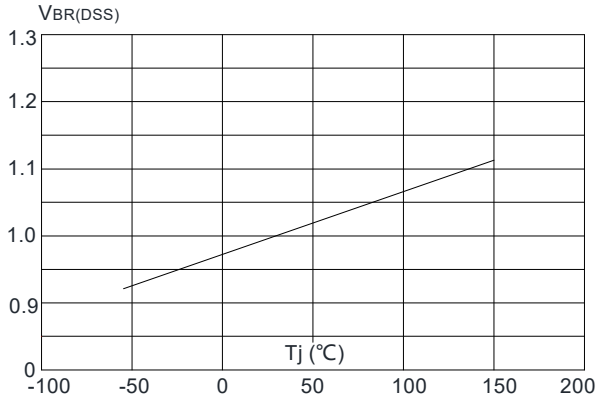


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

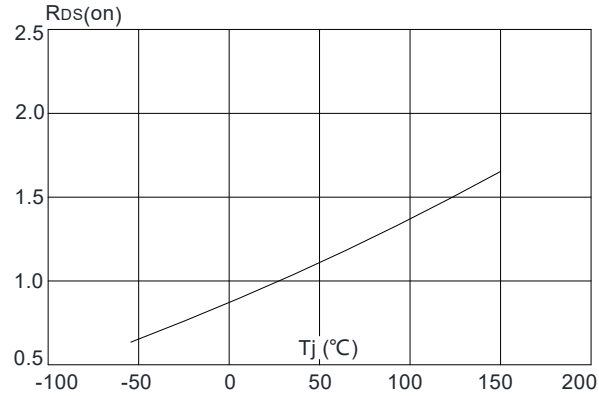


Figure 8: Normalized on Resistance vs. Junction Temperature

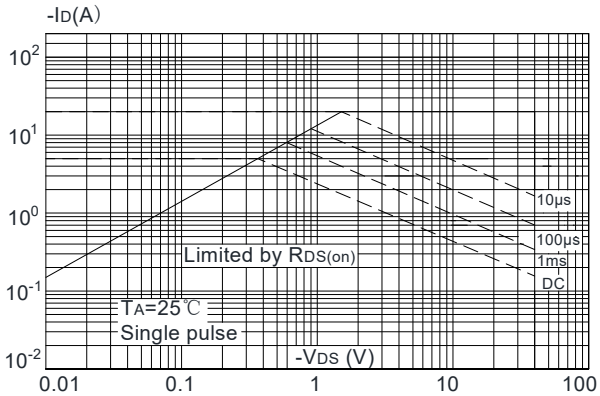


Figure 9: Maximum Safe Operating Area

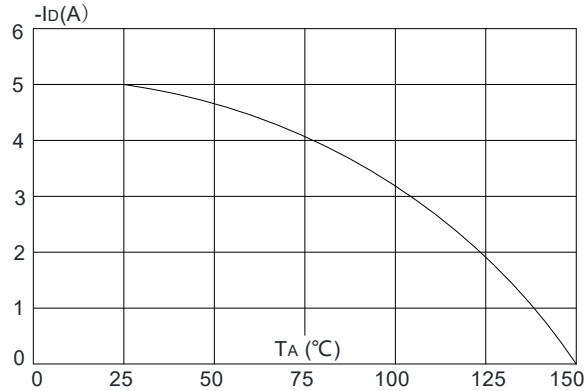


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

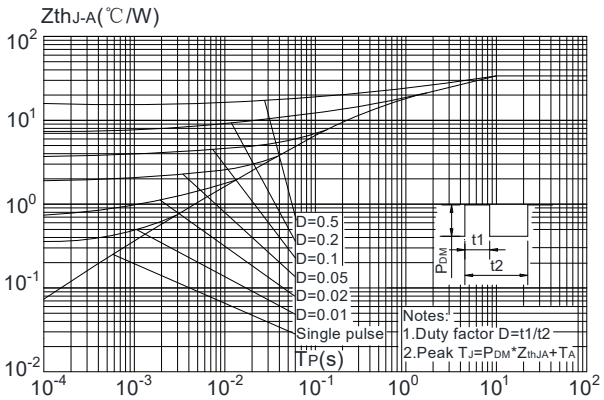


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient