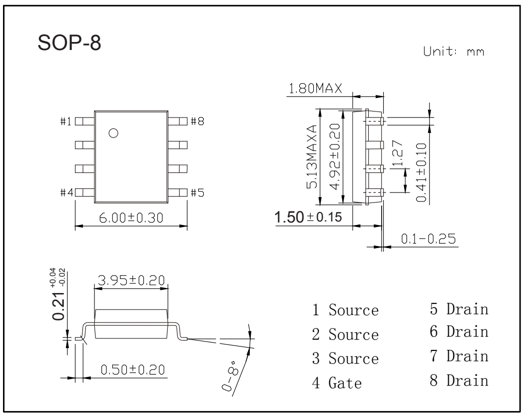
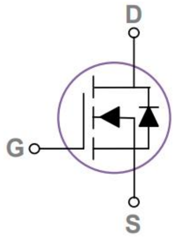
N-Channel MOSFET
RC4406A

■ Features

- VDS (V)= 30V
- ID= 10A
- RDS(ON)＜ 12mΩ (VGS= 10V)
- RDS(ON)＜ 18mΩ (VGS= 4.5V)





■ Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous(Note2)	T_C=25°C	I_D	10	A
	T_C=70°C		8	A
-Pulsed(Note 1、Note 2)		I_{DM}	40	A
Maximum Power Dissipation	T_C=25°C	P_D	2.1	W
	T_C=70°C		1.7	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	60	°C /W

N-Channel MOSFET
RC4406A

■ Electrical Characteristics (T$_C$=25 ℃, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , $I_{D=}$ 250uA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V , V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V , V_{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D=250uA	1	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =10V , I_D =8A		9.5	12	mΩ
		V_{GS} =4.5V , I_D =6A		13	18	mΩ
Forward Transconductance	g_{FS}	Vgs =10V , I_D =3A		6		S
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C_{ISS}	V_{DS} =25V , V_{GS} =0 V , f =1.0MHz		650		pF
Output Capacitance	C_{OSS}			85		pF
Reverse Transfer Capacitance	C_{RSS}			60		pF
Total Gate Charge	Qg	V_{DS} =15V , I_D =4.5A , V_{GS} =4.5V		7.6		nC
Gate-Source Charge	Qgs	V_{DS} =15V , I_D =10A , V_{GS} =10V		2.5		nC
Gate-Drain Charge	Qgd			3		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} =15V , I_D =1A , V_{GS} =10V , R_G =6Ω		3.8		ns
Rise Time	tr			10		ns
Turn-Off Delay Time	tD(OFF)			22		ns
Fall Time	tf			7.0		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A			1.0	V

Notes：

1、 Pulse Test Width < 300us,Duty Cycle< 2%

2、 Drain current limited by maximum junction temperature.

3、 Starting Tj=25°C ,L=0.1mH,V_{DD}=15V,VGS=10V ,RG=25Ω

4、 Guaranteed by design,not subject to production testing.

■ Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

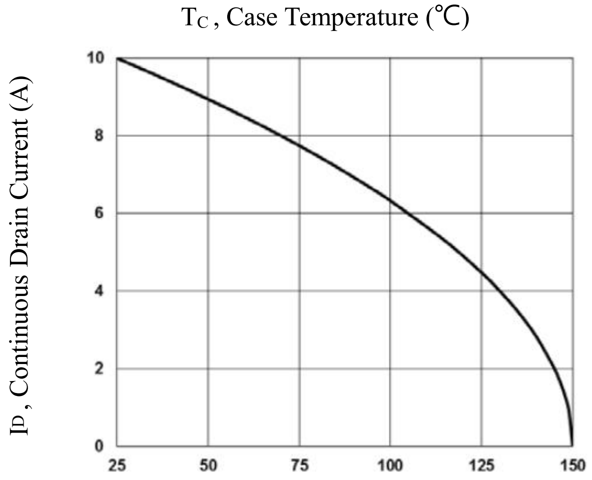


Fig.2 Normalized RDSON vs. TJ

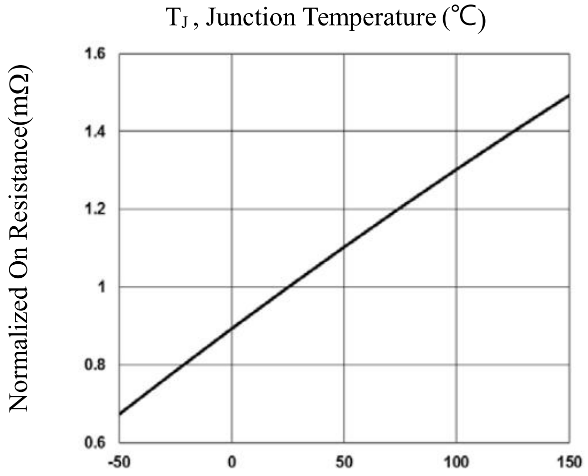


Fig.3 Normalized Vth vs. TJ

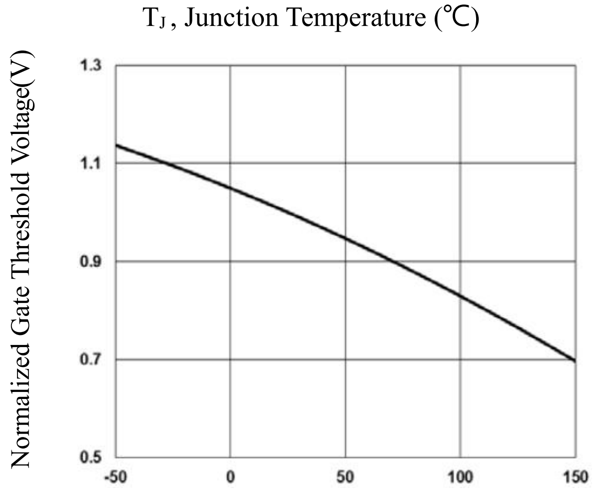


Fig.4 Gate Charge Waveform

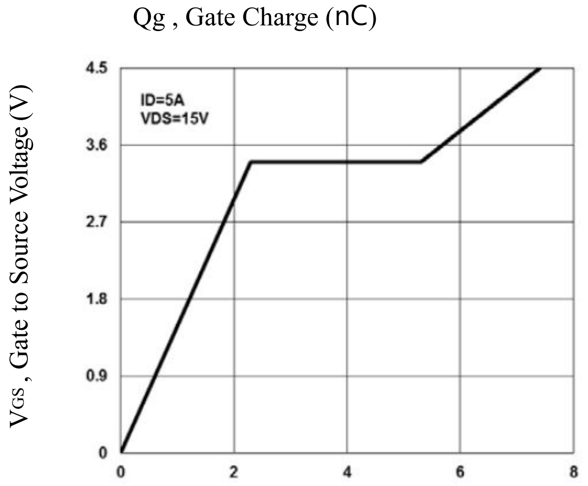


Fig.5Normalized Transient Impedance

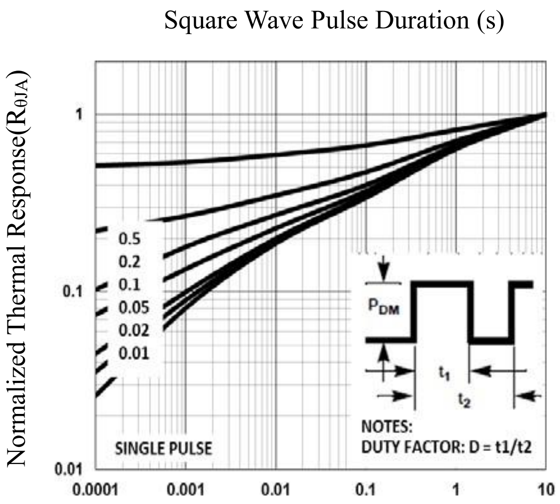


Fig.6 Maximum Safe Operation Area

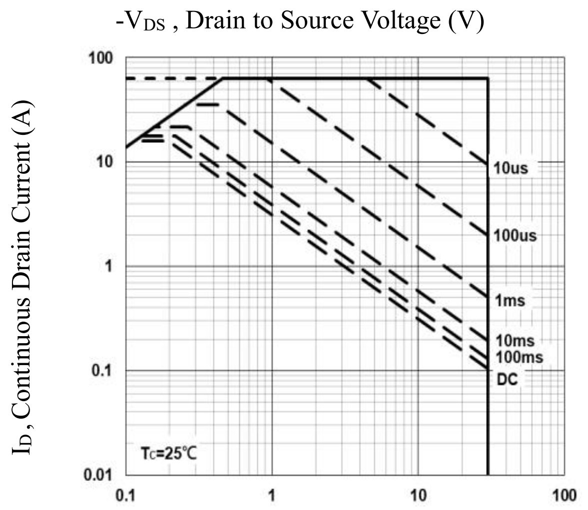


Figure 7a. Switching Test Circuit

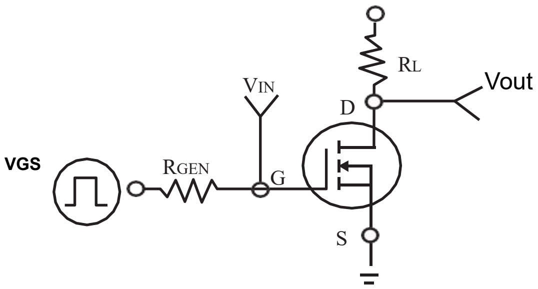


Figure 7b. Switching Waveforms

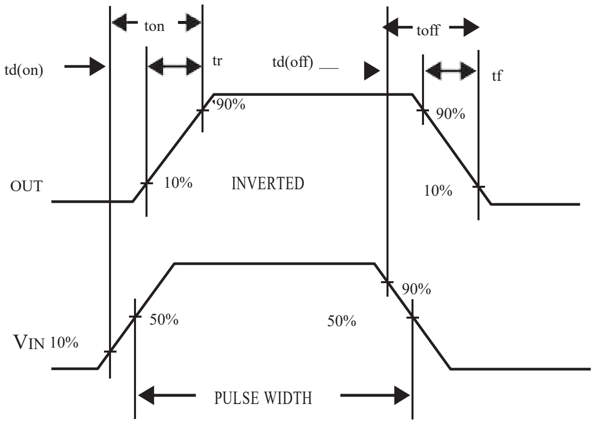


Figure 8a.Unclamped Inductive Test Circuit

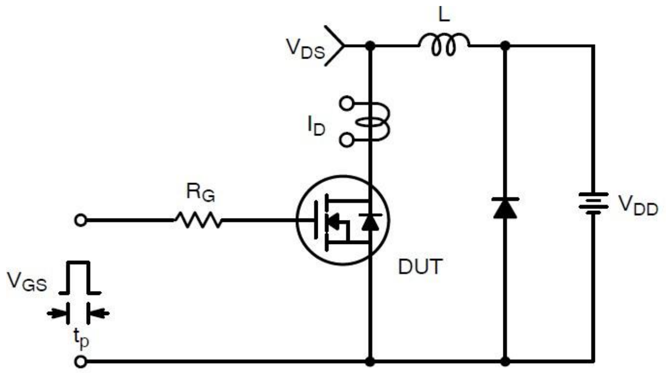


Figure 8b.Unclamped Inductive Waveforms