Dual N-channel Enhancement Mode Power MOSFET

Features

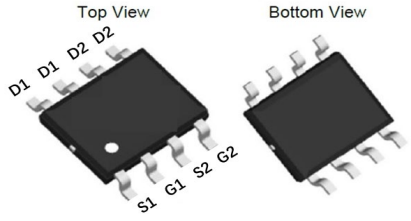
- VDS= 30V, ID= 9 A
  RDS(ON) < 16 mΩ @ VGS = 10V
  RDS(ON) < 24 mΩ @ VGS = 4.5V

General Features

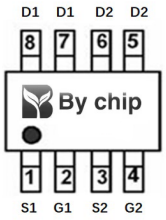
- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

100% UIS TESTED!
100% ΔVds TESTED!

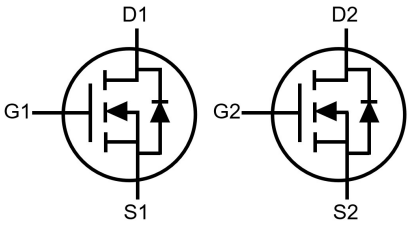
RoHS



SOP-8 (Dual)



Pin Assignment



Schematic diagram

Maximum ratings, at T_j=25 °C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		30	V
I_S	Diode continuous forward current	T_A=25°C	2.3	A
I_D	Continuous drain current @V_{GS}=10V	T_A=25°C	9	A
		T_A=100°C	5.7	A
I_{DM}	Pulse drain current tested ①	T_A=25°C	36	A
EAS	Avalanche energy, single pulsed ②		9	mJ
P_D	Maximum power dissipation	T_A=25°C	2	W
V_{GS}	Gate-Source voltage		±20	V
MSL			Level 3	
T_{STG} T_J	Storage and operating temperature range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	40	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125℃)	V_{DS}=30V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1		2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ②	V_{GS}=10V, I_D=8A	--		16	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance ②	V_{GS}=4.5V, I_D=4A	--		24	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	--	455	--	pF
C_{oss}	Output Capacitance		--	75	--	pF
C_{rss}	Reverse Transfer Capacitance		--	60	--	pF
R_g	Gate Resistance	f=1MHz	--	3.3	--	Ω
Q_g	Total Gate Charge	V_{DS}=15V,I_D=8A, V_{GS}=10V	--	11	--	nC
Q_{gs}	Gate-Source Charge		--	3	--	nC
Q_{gd}	Gate-Drain Charge		--	4	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, I_D=8A, R_G=3Ω, V_{GS}=10V	--	7	--	ns
t_r	Turn-on Rise Time		--	10	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	22	--	ns
t_f	Turn-Off Fall Time		--	7	--	ns
Source- Drain Diode Characteristics@ T_J = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=8A,V_{GS}=0V	--	0.9	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=8A, V_{GS}=0V di/dt=500A/μs	--	9.5	--	ns
Q_{rr}	Reverse Recovery Charge		--	11.8	--	nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH,R_G = 25Ω, I_{AS} = 6A, V_{GS} =10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

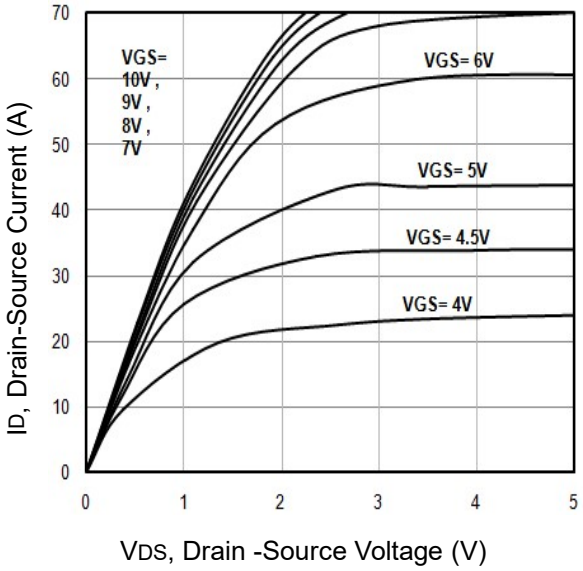


Fig1. Typical Output Characteristics

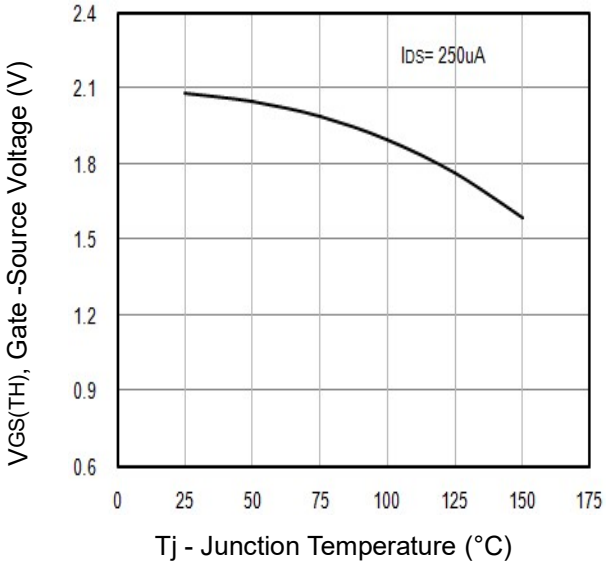


Fig2. Threshold Voltage Vs. Temperature

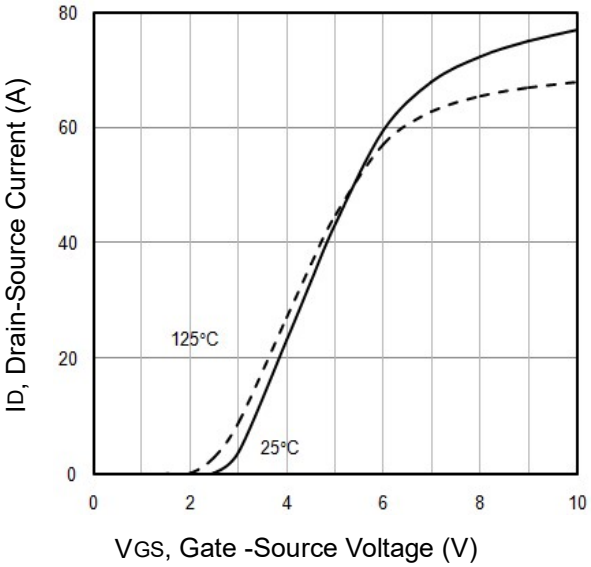


Fig3. Typical Transfer Characteristics

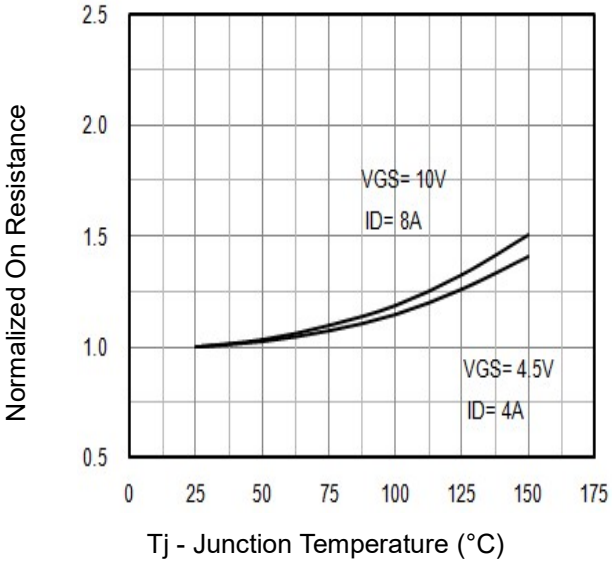


Fig4. Normalized On-Resistance Vs. Temperature

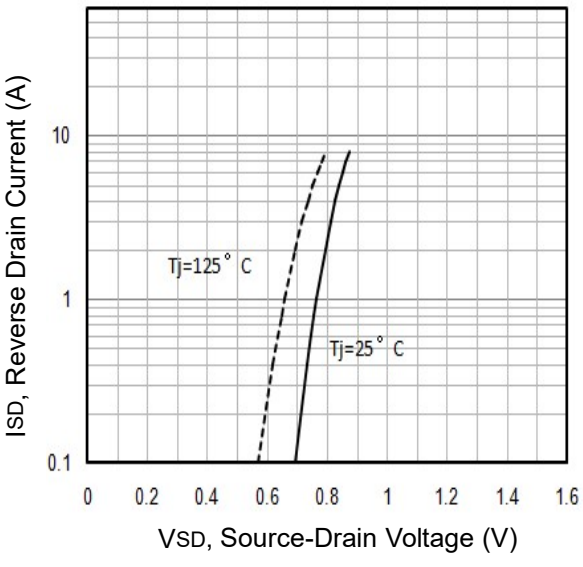


Fig5. Typical Source-Drain Diode Forward Voltage

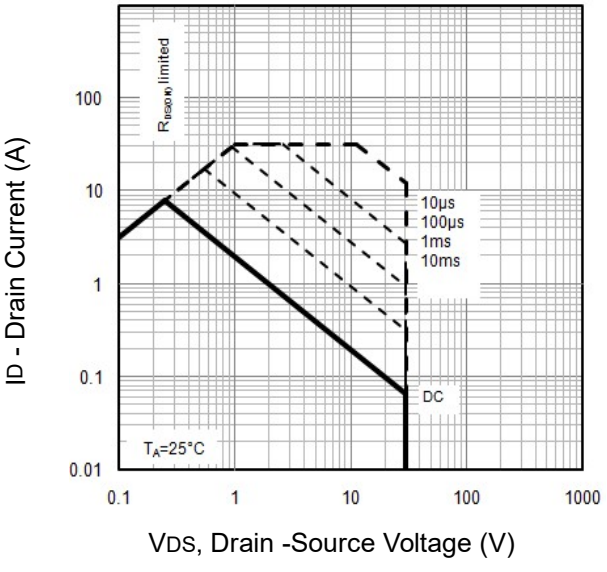


Fig6. Maximum Safe Operating Area

Typical Characteristics

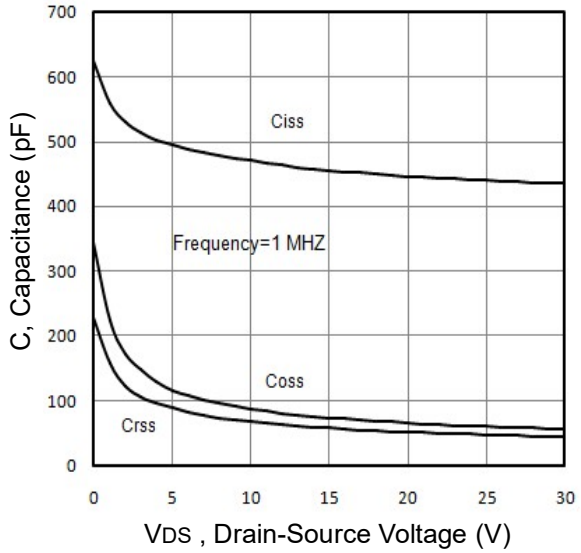


Fig7. Typical Capacitance Vs.Drain-Source Voltage

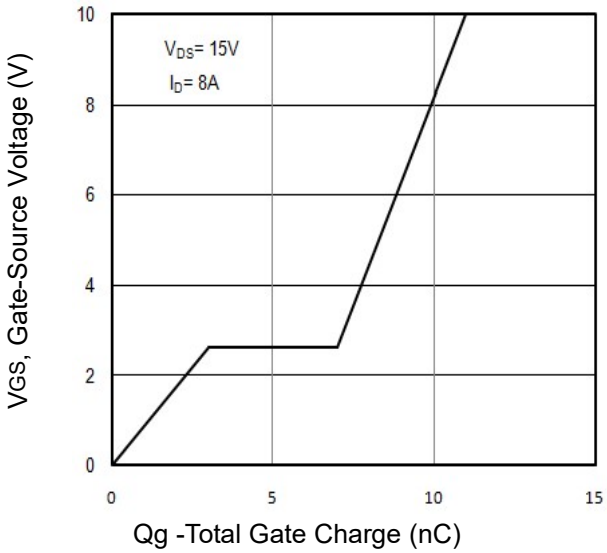


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

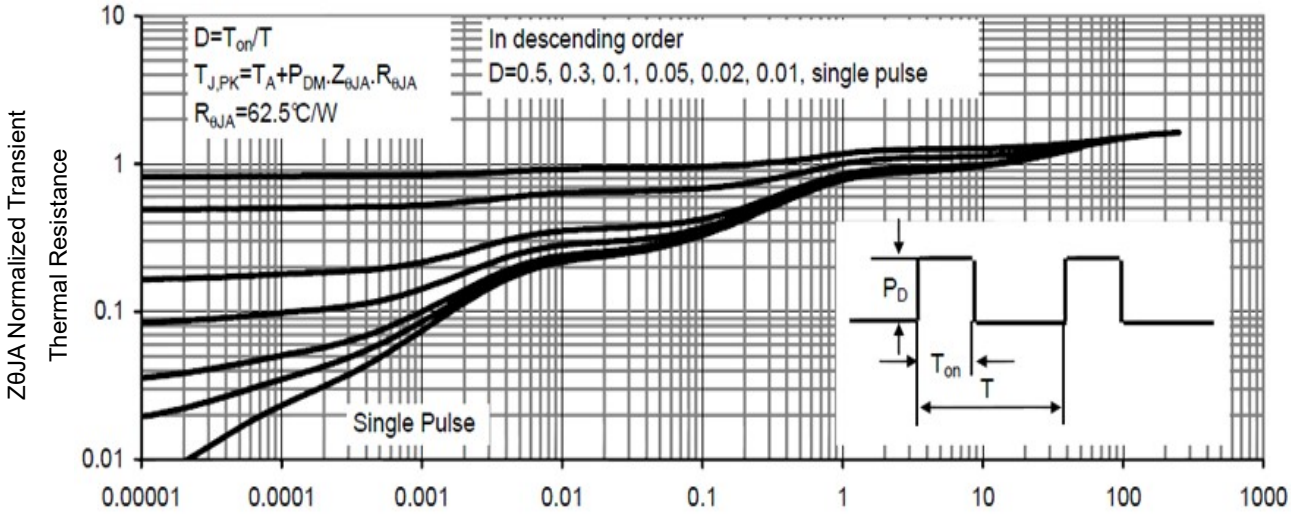


Fig9. T1 ,Transient Thermal Response Curve

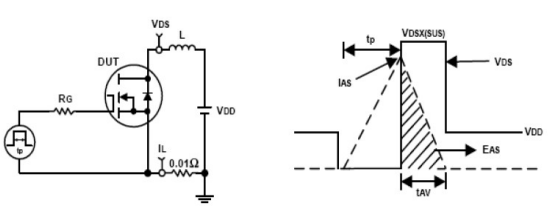


Fig10. Unclamped Inductive Test Circuit and waveforms

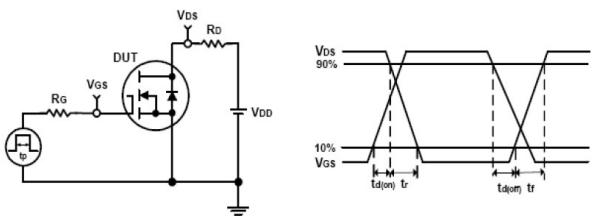


Fig11. Switching Time Test Circuit and waveforms