

Dual P-channel Enhancement Mode Power MOSFET

Features

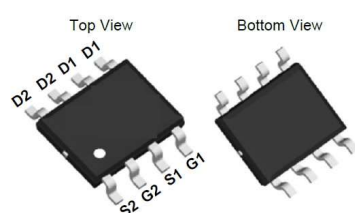
- $V_{DS} = -20V$, $I_D = -13 A$
 $R_{DS(ON)} < 15m\Omega$ @ $V_{GS} = -10V$
 $R_{DS(ON)} < 20m\Omega$ @ $V_{GS} = -4.5V$

General Features

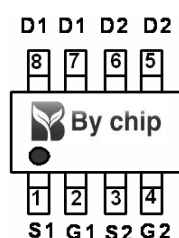
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free and Green Available

100% UIS TESTED!

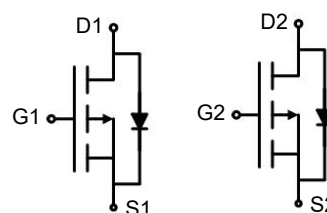
100% ΔV_{ds} TESTED!



SOP-8 (Dual)



Pin Assignment



Schematic diagram

Maximum ratings, at $T_A = 25^\circ C$, unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	-20	V
V_{GS}	Gate-Source voltage	± 12	V
I_S	Diode continuous forward current	$T_A = 25^\circ C$ -2.6	A
I_D	Continuous drain current @ $V_{GS} = -4.5V$	$T_A = 25^\circ C$ -13	A
		$T_A = 70^\circ C$ -10	A
I_{DM}	Pulse drain current tested ①	$T_A = 25^\circ C$ -52	A
E_{AS}	Avalanche energy, single pulsed ②	42	mJ
P_D	Maximum power dissipation	$T_A = 25^\circ C$ 3.1	W
T_{STG}, T_J	Storage and operating temperature range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typical	Max	Unit
$R_{\theta JL}$	Thermal Resistance-Junction to Lead		29	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		48	$^\circ C/W$

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	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =-20V,V _{GS} =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(T _j =125°C)	V _{DS} =-20V,V _{GS} =0V	--	--	-100	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±12V,V _{DS} =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250μA	-0.3		-2.0	V
RDS(on)	Drain-Source On-State Resistance ③	V _{GS} =-4.5V, I _D =-10A	--		15	mΩ
RDS(on)	Drain-Source On-State Resistance ③	V _{GS} =-2.5V, I _D =-10A	--		20	mΩ
RDS(on)	Drain-Source On-State Resistance ③	V _{GS} =-1.8V, I _D =-8A	--		32	mΩ
Dynamic Electrical Characteristics @ T _j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V _{DS} =-10V,V _{GS} =0V, f=1MHz			4655	pF
Coss	Output Capacitance				465	pF
Crss	Reverse Transfer Capacitance				335	pF
Rg	Gate Resistance	f=1MHz	0.2		5	Ω
Qg	Total Gate Charge	V _{DS} =-10V,I _D =-10A, V _{GS} =-4.5V	--		39	nC
Qgs	Gate-Source Charge		--		8.1	nC
Qgd	Gate-Drain Charge		--		7.8	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V _{DD} =-10V, I _D =-10A, R _G =2.7Ω, V _{GS} =-10V	--	7.6	--	ns
Tr	Turn-on Rise Time		--	44	--	ns
Td(off)	Turn-Off Delay Time		--	75	--	ns
Tf	Turn-Off Fall Time		--	27	--	ns
Source- Drain Diode Characteristics@ T _j = 25°C (unless otherwise stated)						
VSD	Forward on voltage	I _{SD} =-10A,V _{GS} =0V	--	-0.8	-1.2	V
Trr	Reverse Recovery Time	T _j =25°C,I _{sd} =-10A, V _{GS} =0V	--	14	28	ns
Qrr	Reverse Recovery Charge	dI/dt=-100A/μs	--	4.7	9.4	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} = -13A, V_{GS} = -10V. Part not recommended for use above this value
- ③ Pulse width ≤ 380μs; duty cycles ≤ 2%.

Typical Characteristics

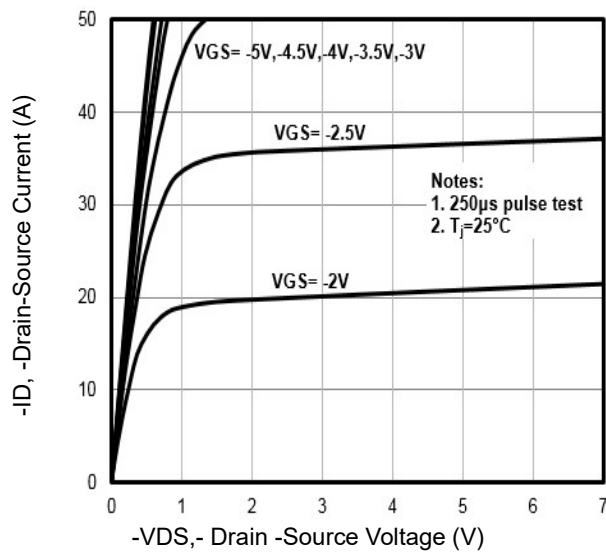


Fig1. Typical Output Characteristics

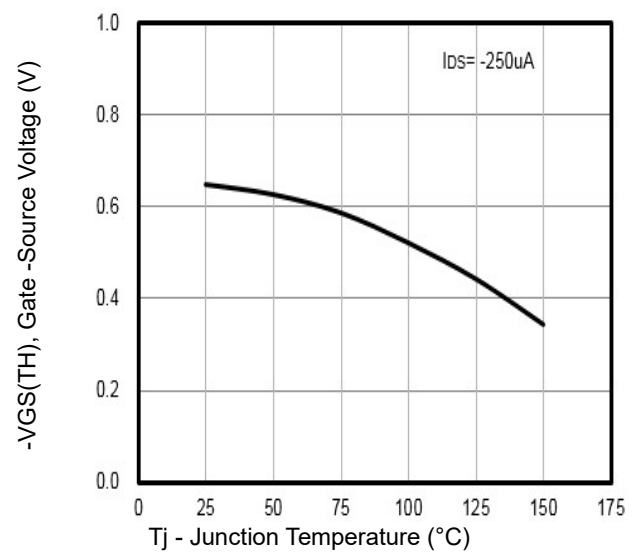


Fig2. $-V_{GS(TH)}$ Gate -Source Voltage Vs. T_j

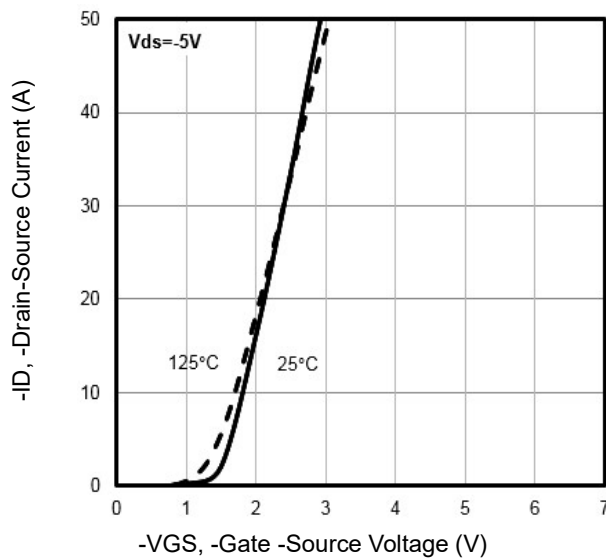


Fig3. Typical Transfer Characteristics

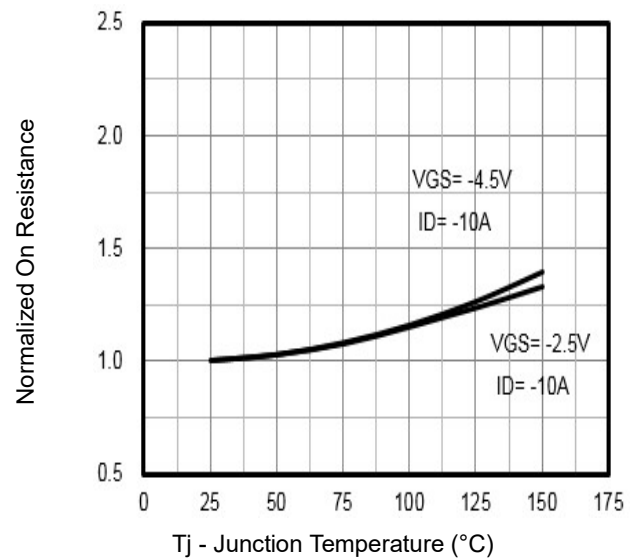


Fig4. Normalized On-Resistance Vs. T_j

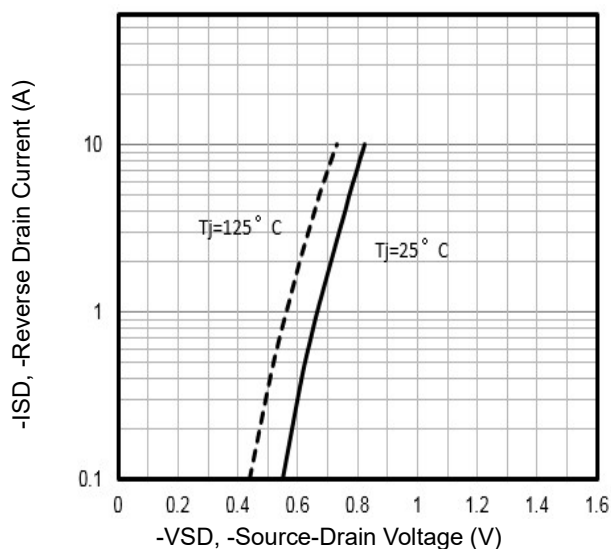


Fig5. Typical Source-Drain Diode Forward Voltage

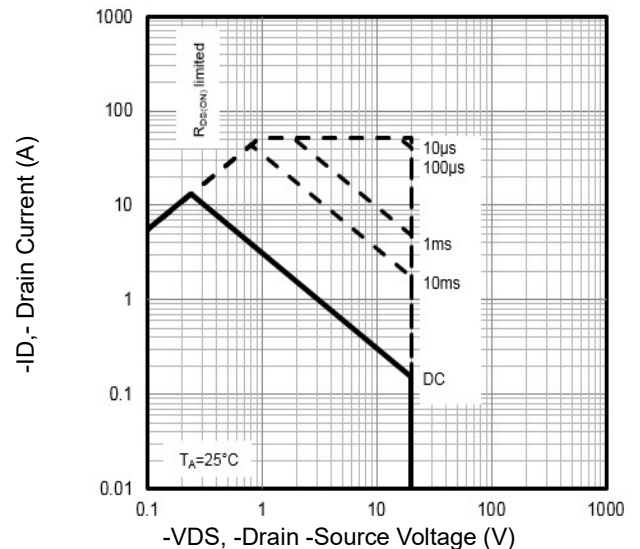


Fig6. Maximum Safe Operating Area

Typical Characteristics

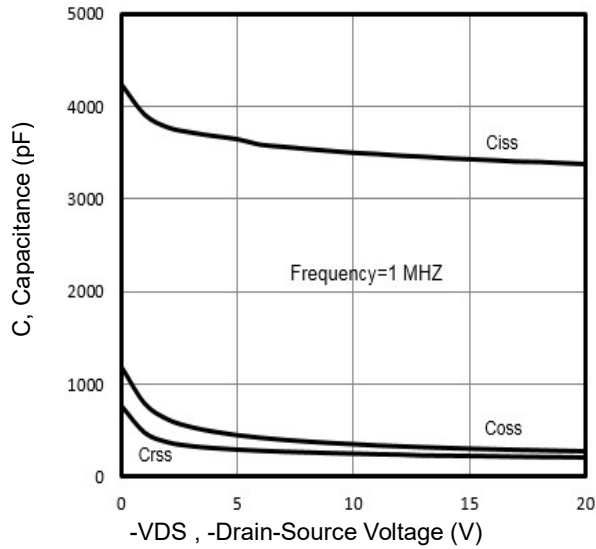


Fig7. Typical Capacitance Vs. Drain-Source Voltage

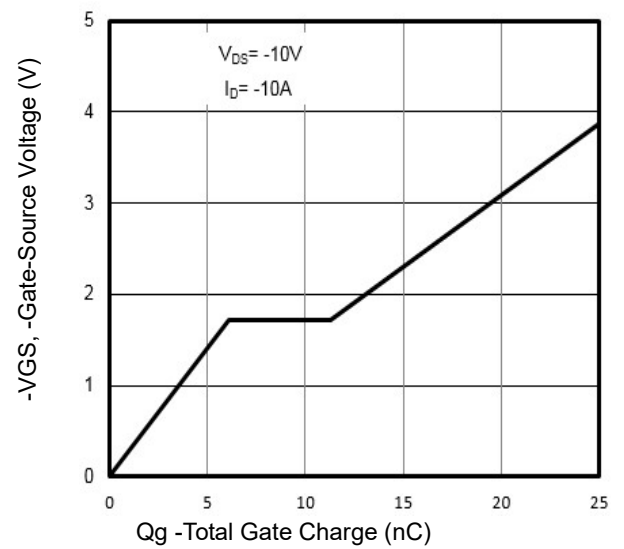


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

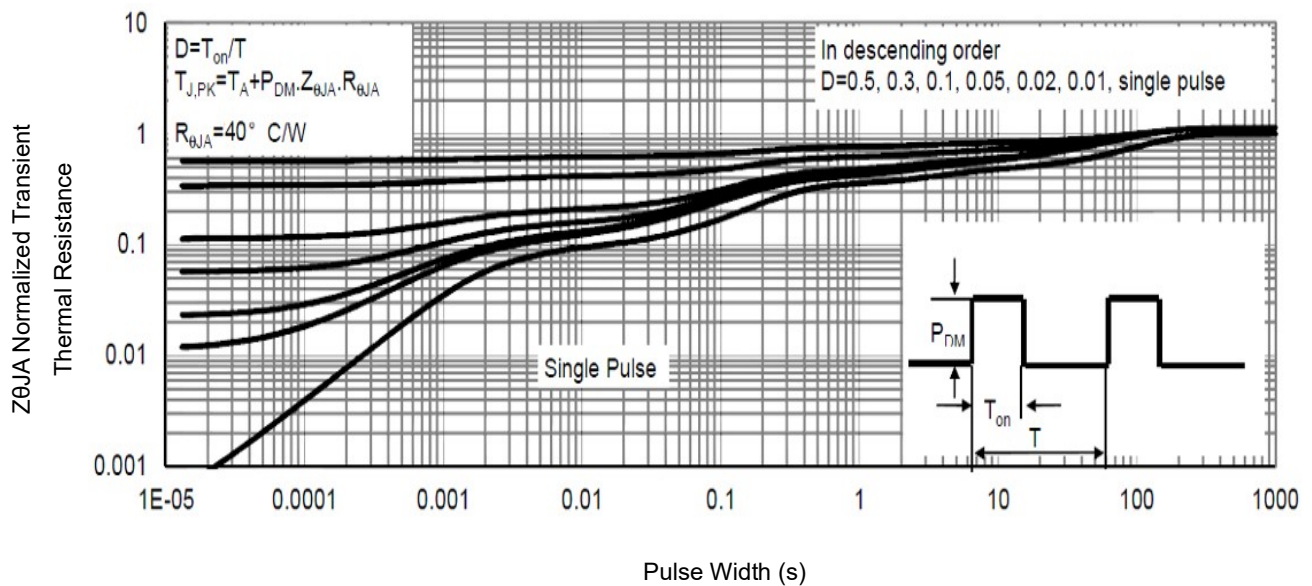


Fig9. Normalized Maximum Transient Thermal Impedance

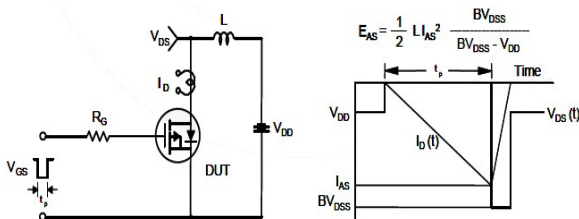


Fig10. Unclamped Inductive Test Circuit and Waveforms

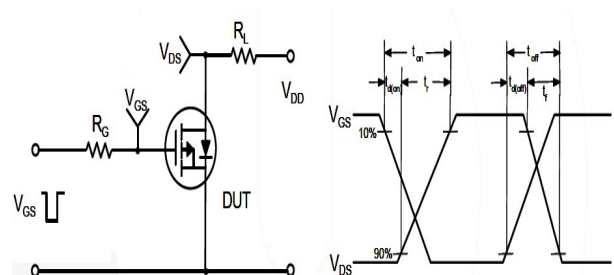


Fig11. Switching Time Test Circuit and waveforms