

Dual N-channel Enhancement Mode Power MOSFET

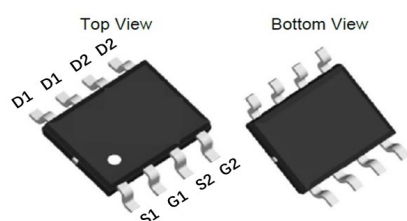
Features

- $V_{DS} = 30V$, $I_D = 6.5 A$
 $R_{DS(ON)} < 25 m\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 27 m\Omega @ V_{GS} = 4.5V$

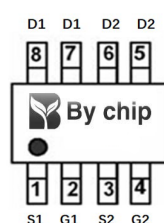
General Features

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

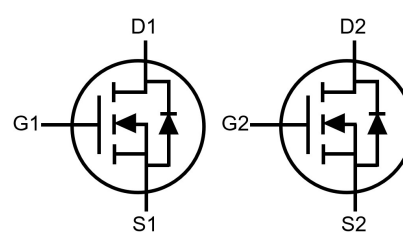
100% UIS TESTED!
100% ΔV_{ds} TESTED!



SOP-8 (Dual)



Pin Assignment



Schematic diagram

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	
Gate-Source Voltage	V_{GS}	± 12	
Drain Current-Continuous	I_D	6.5	
Drain Current-Continuous($T_C = 100^\circ C$)	$I_D(100^\circ C)$	4.	A
Pulsed Drain Current	I_{DM}	26	
Maximum Power Dissipation	P_D	2	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Parameter	symbol	Typ	Max	Unit
Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	62.5	85	$^\circ C/W$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

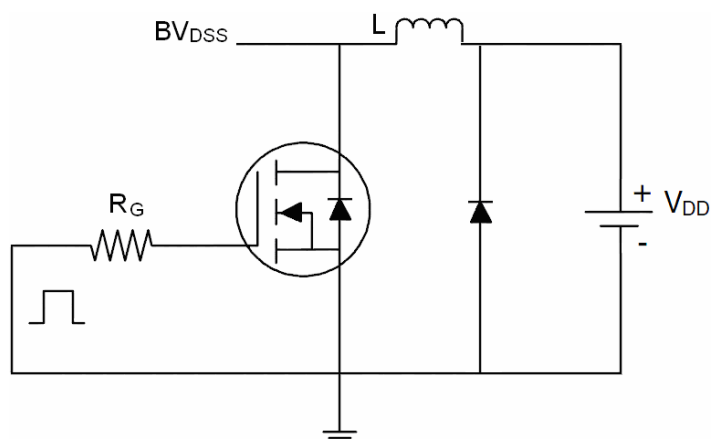
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		2.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A	-		25	mΩ
		V _{GS} =4.5V, I _D =5A	-		27	
		V _{GS} =2.5V, I _D =5A	-		33	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5A	-	10	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V, F=1.0MHz	-	595	-	PF
Output Capacitance	C _{OSS}		-	39	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	36	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, R _L =3Ω V _{GS} =10V, R _G =3Ω	-	3.0	-	nS
Turn-on Rise Time	t _r		-	4.5	-	nS
Turn-Off Delay Time	t _{d(off)}		-	25	-	nS
Turn-Off Fall Time	t _f		-	3.8	-	nS
Total Gate Charge	Q _g	V _{DS} =15V, I _D =5A, V _{GS} =4.5V	-	9.3	-	nC
Gate-Source Charge	Q _{gs}		-	1.6	-	nC
Gate-Drain Charge	Q _{gd}		-	2.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =5A	-	-	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	6.5	A

Notes:

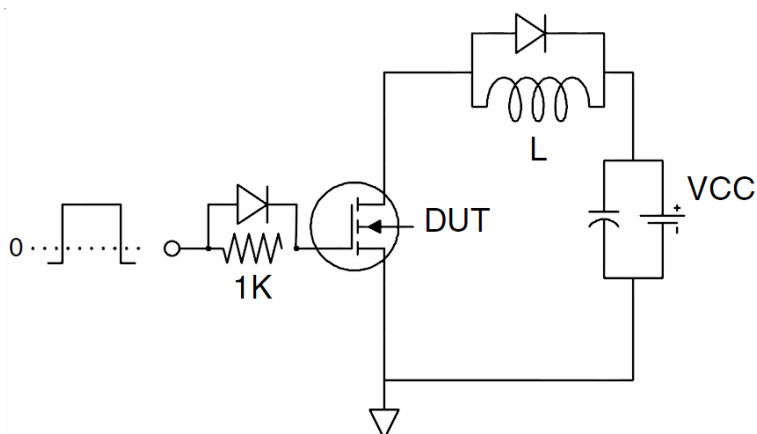
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design. Surface Mounted on FR4 Board, $t \leq 10$ sec. The current rating is based on the $t \leq 10s$ thermal resistance rating.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

Test Circuit

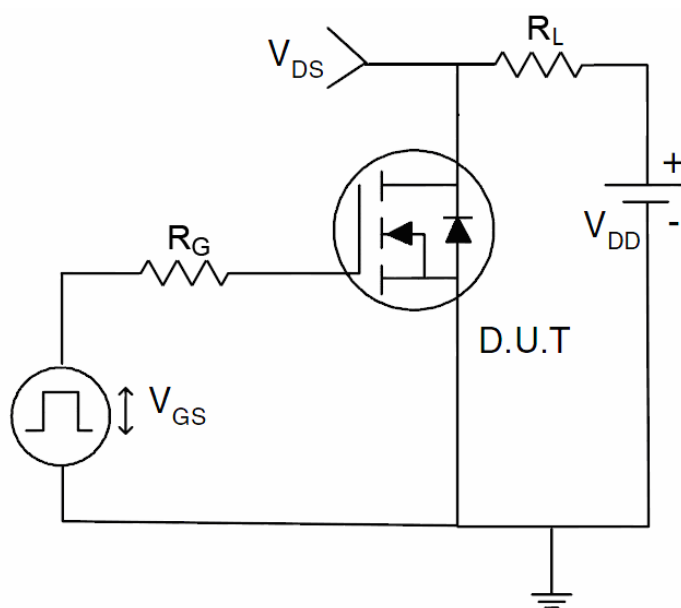
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit:



3) Switch Time Test Circuit:



Typical Electrical and Thermal Characteristics (Curves)

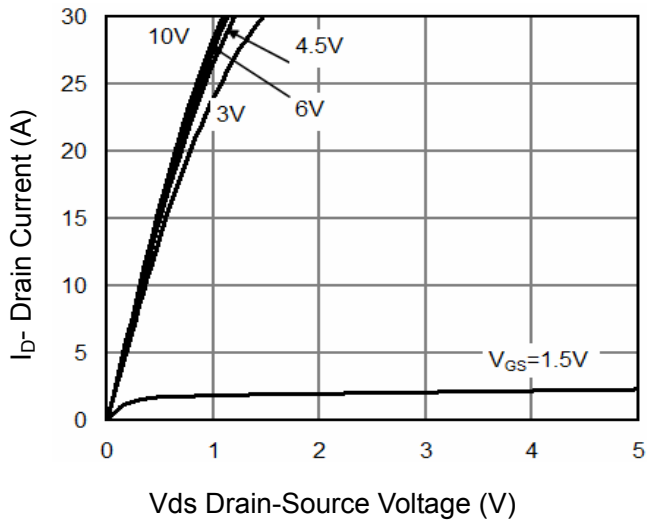


Figure 1 Output Characteristics

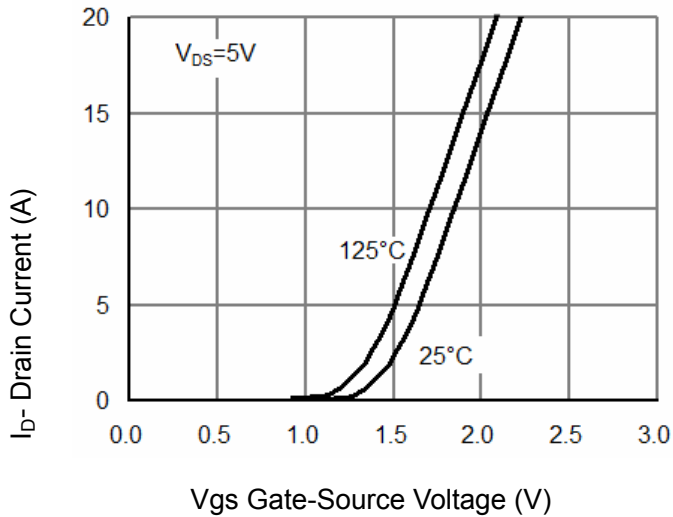


Figure 2 Transfer Characteristics

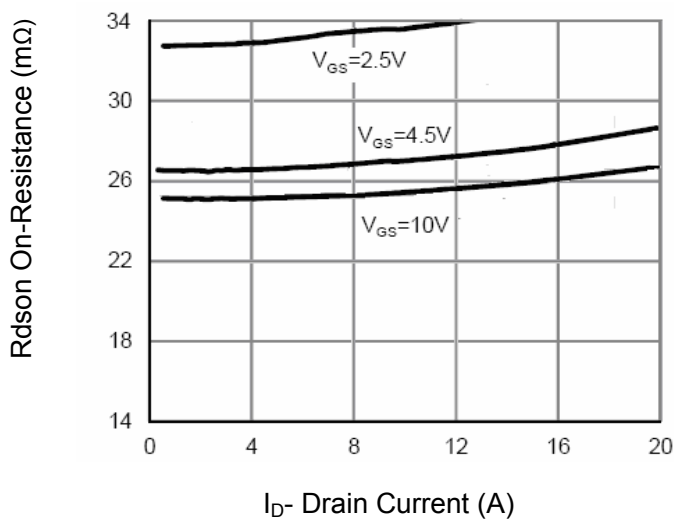


Figure 3 $R_{DS(on)}$ - Drain Current

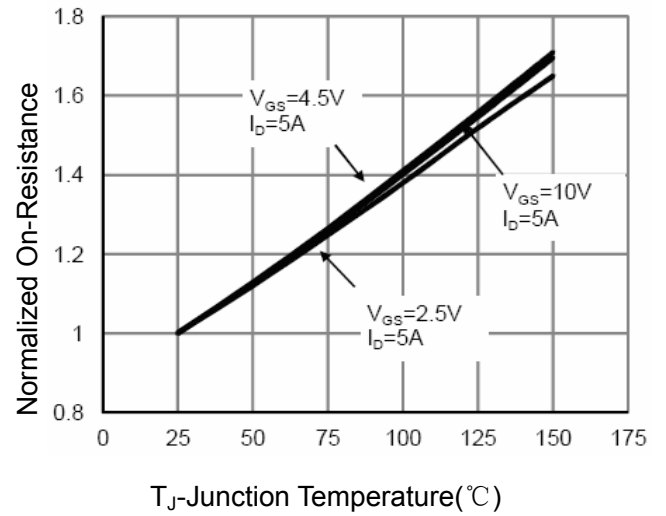


Figure 4 $R_{DS(on)}$ -Junction Temperature

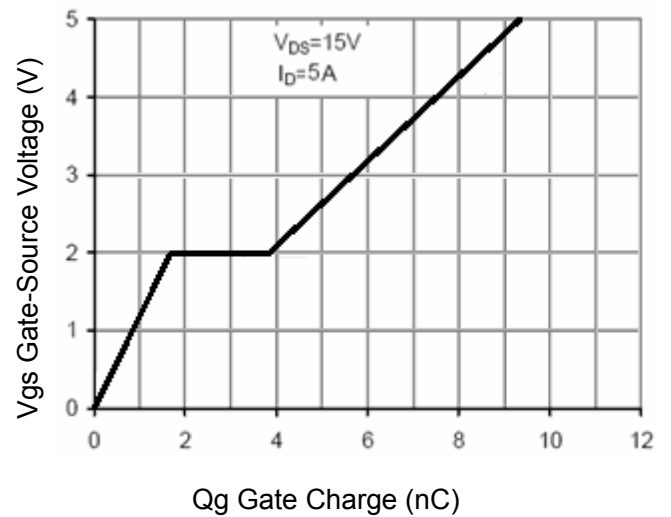


Figure 5 Gate Charge

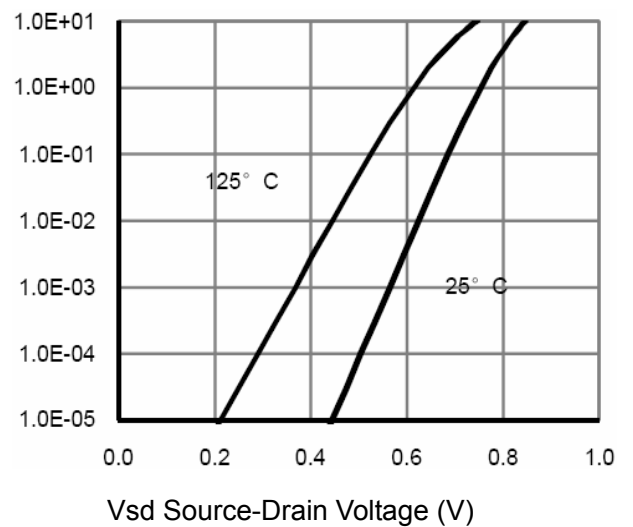


Figure 6 Source- Drain Diode Forward

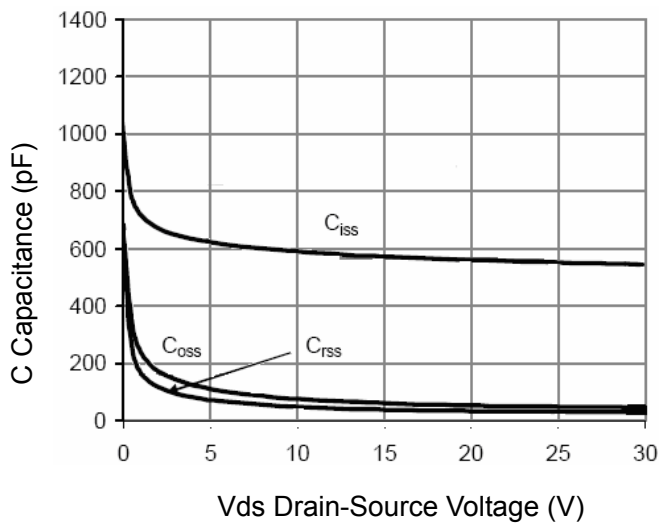


Figure 7 Capacitance vs V_{DS}

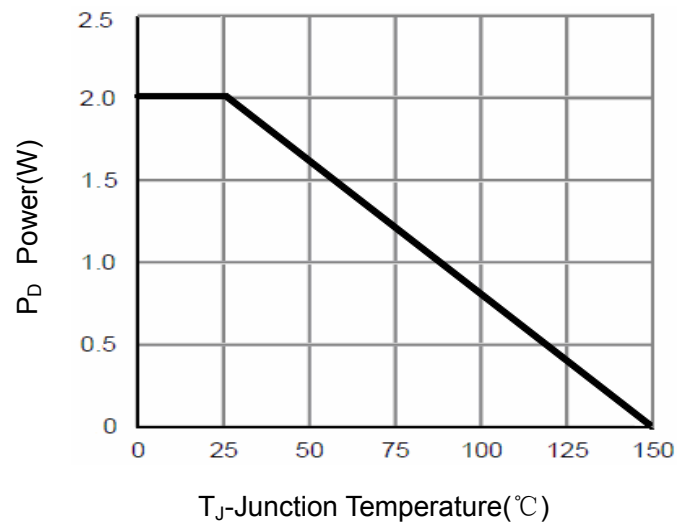


Figure 9 Power Dissipation

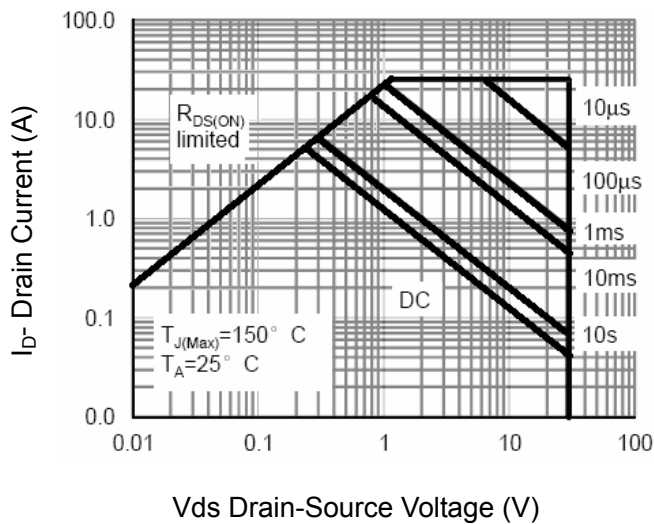


Figure 8 Safe Operation Area

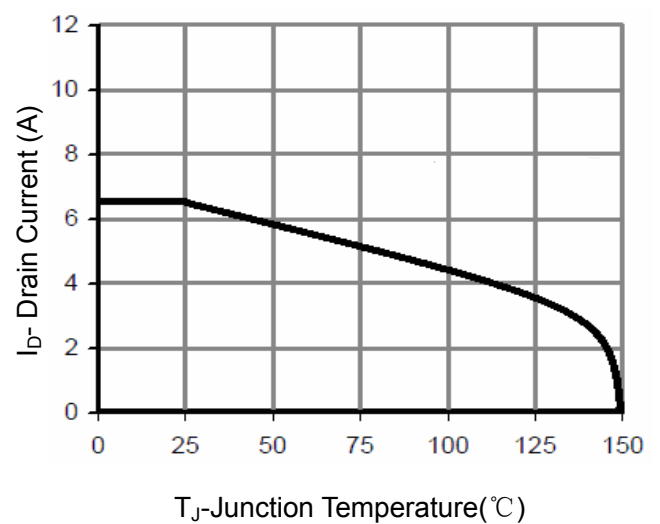


Figure 10 Current De-rating

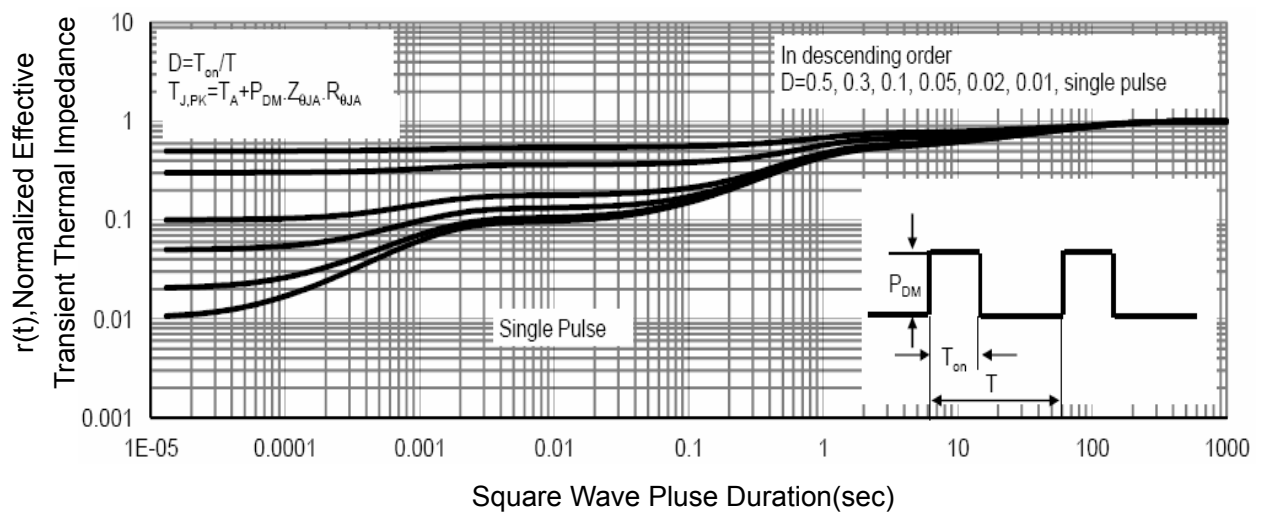


Figure 11 Normalized Maximum Transient Thermal Impedance