

## Dual N-channel Enhancement Mode Power MOSFET

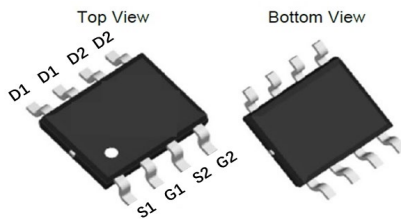
### Features

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

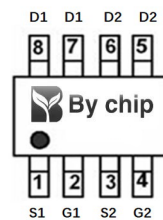
### General Features

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

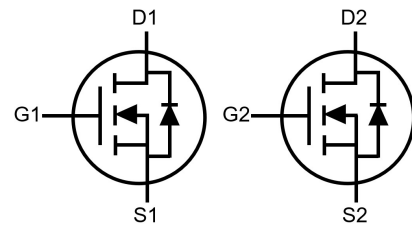
100% UIS TESTED!  
 100%  $\Delta V_{ds}$  TESTED!



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	$V_{GS}$	$\pm 12$	
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 <sup>(Note 2)</sup>	$R_{\theta JA}$	62.5	85	$^\circ C/W$

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

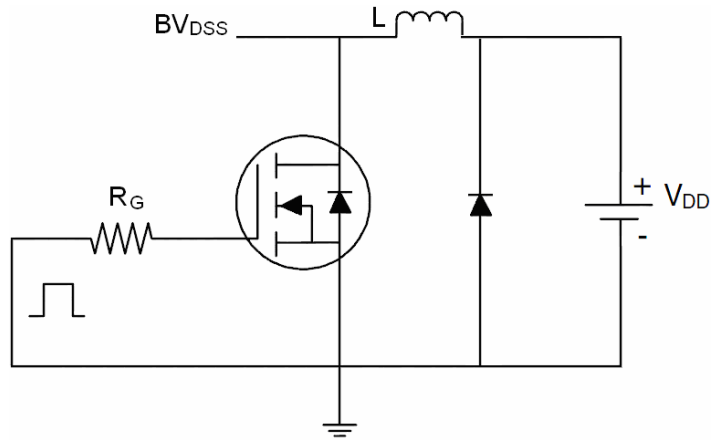
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		2.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-		25	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	-		27	
		$V_{GS}=2.5V, I_D=5A$	-		33	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=5A$	-	10	-	S
<b>Dynamic Characteristics (Note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	595	-	PF
Output Capacitance	$C_{oss}$		-	39	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	36	-	PF
<b>Switching Characteristics (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, R_L=3\Omega$ $V_{GS}=10V, R_G=3\Omega$	-	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
<b>Drain-Source Diode Characteristics</b>						
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:**

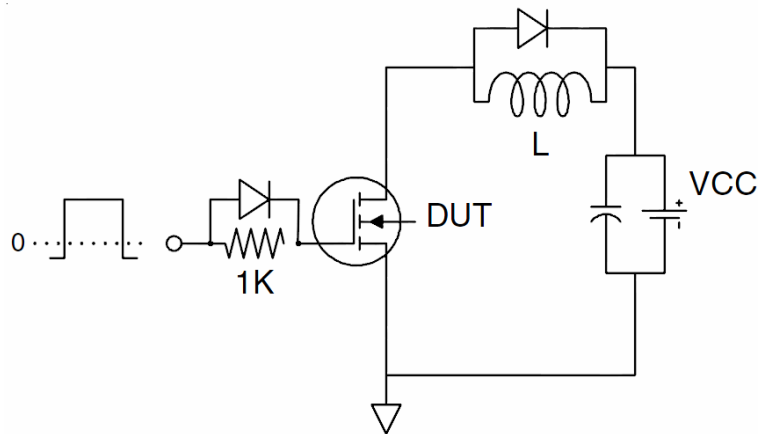
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user's specific board design. Surface Mounted on FR4 Board,  $t \leq 10$  sec. The current rating is based on the  $t \leq 10$ s 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**

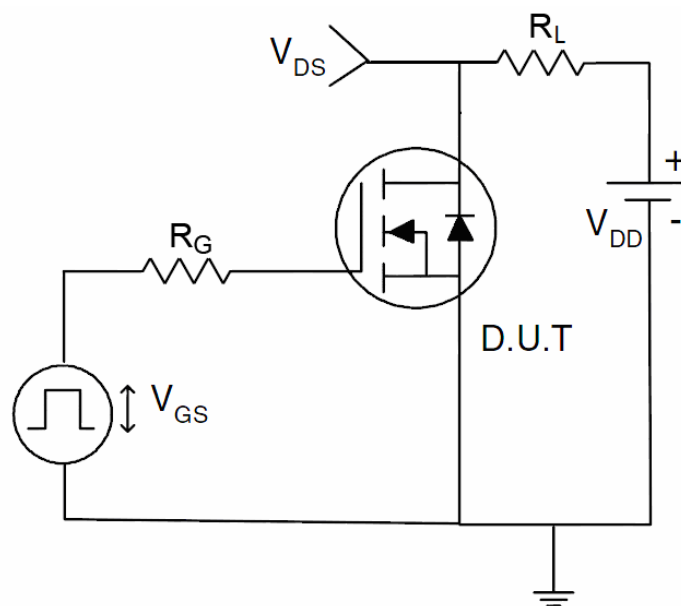
**1) E<sub>AS</sub> Test Circuits**



**2) Gate Charge Test Circuit:**



**3) Switch Time Test Circuit:**



Typical Electrical and Thermal Characteristics (Curves)

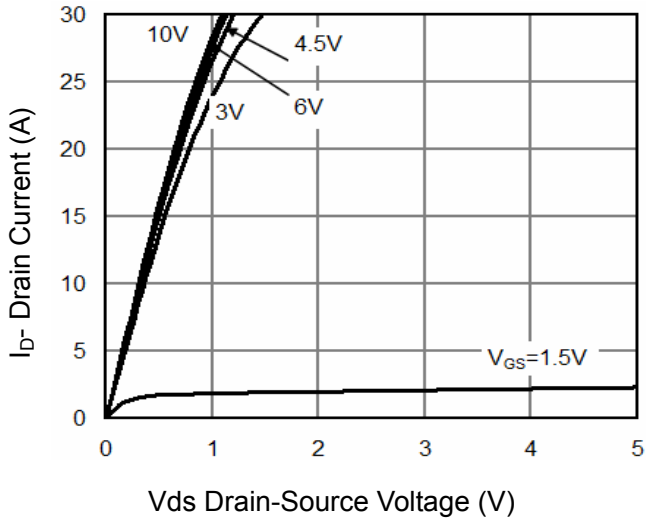


Figure 1 Output Characteristics

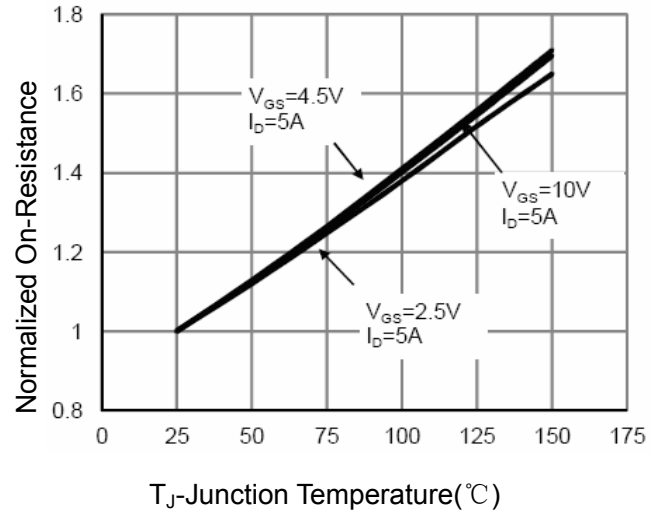


Figure 4  $R_{dson}$ -Junction Temperature

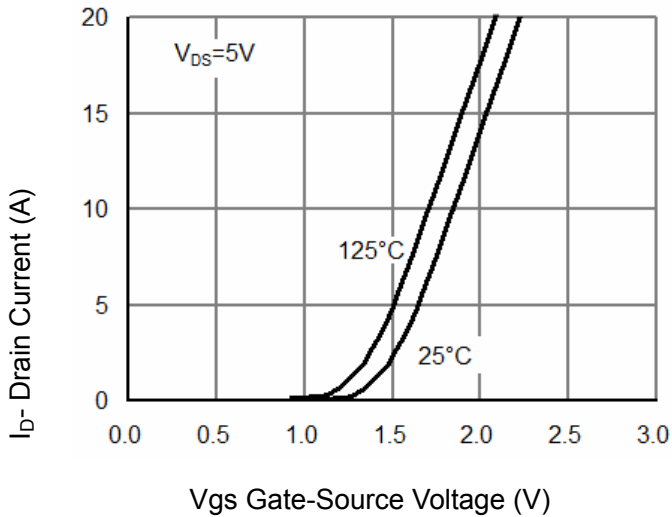


Figure 2 Transfer Characteristics

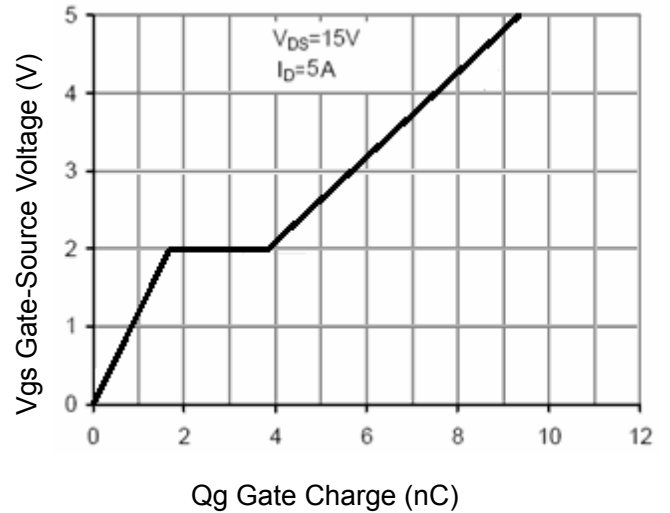


Figure 5 Gate Charge

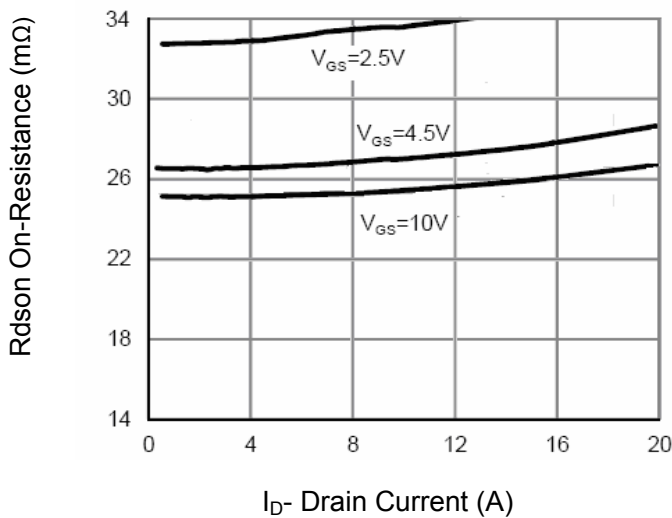


Figure 3  $R_{dson}$ - Drain Current

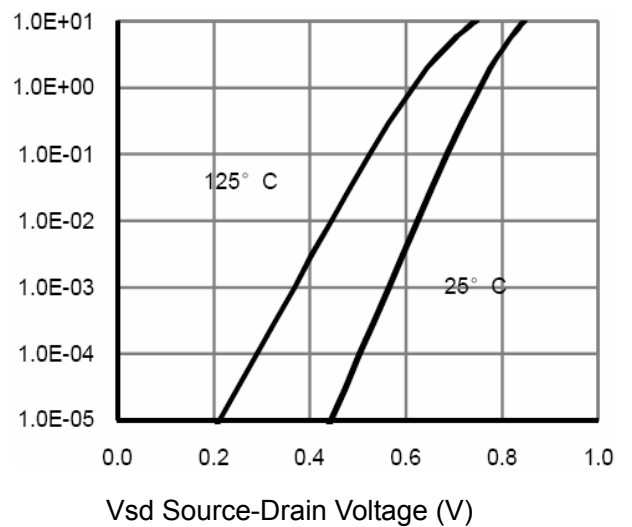


Figure 6 Source- Drain Diode Forward

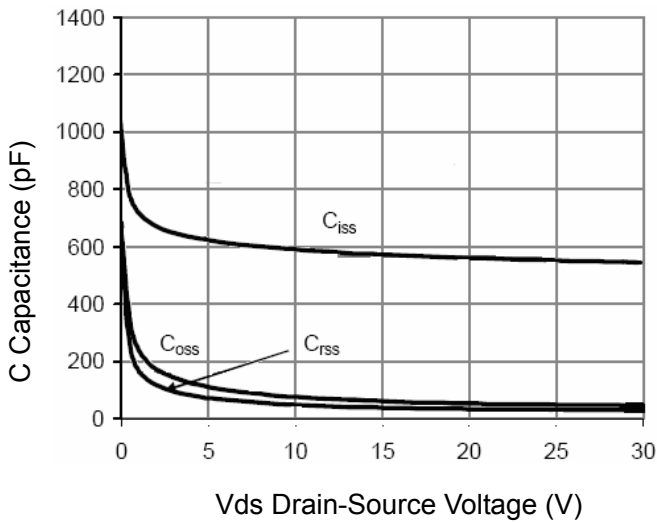


Figure 7 Capacitance vs Vds

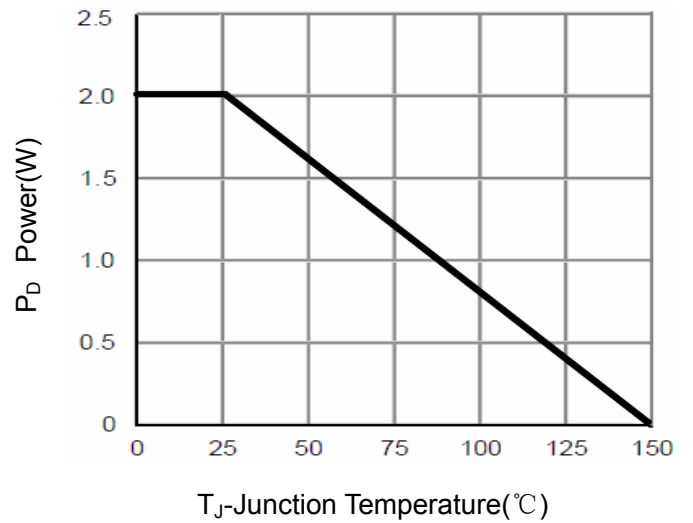


Figure 9 Power Dissipation

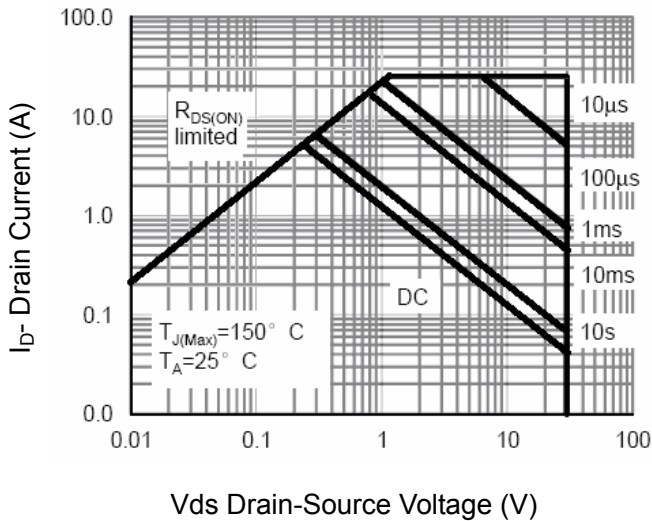


Figure 8 Safe Operation Area

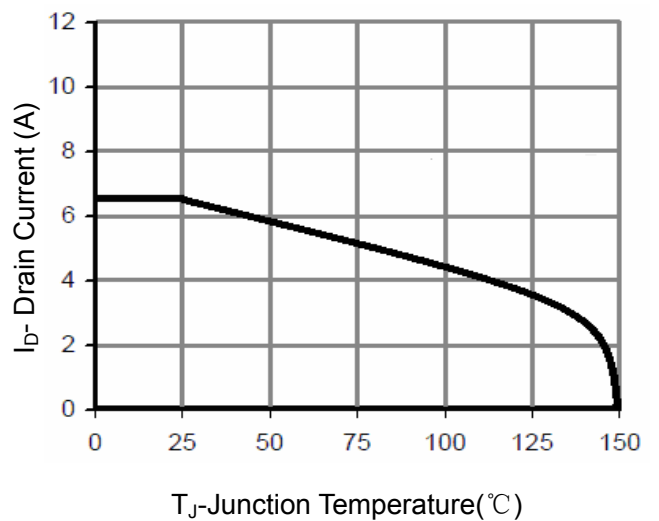


Figure 10 Current De-rating

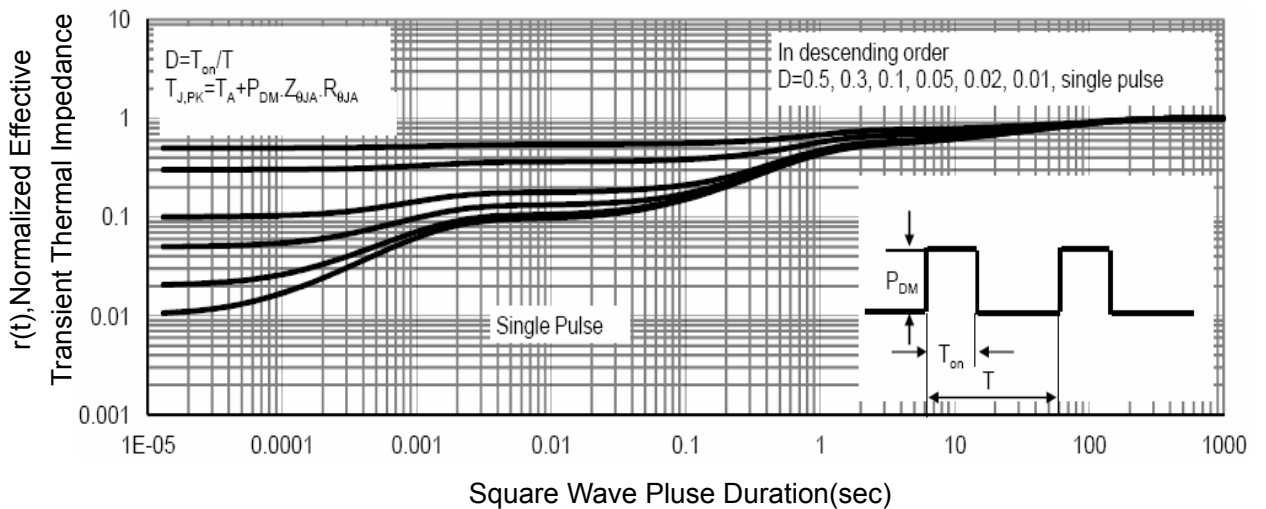


Figure 11 Normalized Maximum Transient Thermal Impedance