

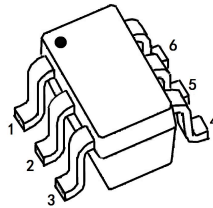
# KY6801

## -20V Dual P-Channel Mosfet

### FEATURES

- $R_{DS(ON)} \leq 150m\Omega$  ( 120m $\Omega$  Typ.)  
@ $V_{GS}=-4.5V$
- $R_{DS(ON)} \leq 230m\Omega$  ( 160m $\Omega$  Typ.)  
@ $V_{GS}=-2.5V$

### SOT-23-6L

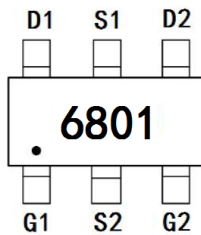


### APPLICATIONS

- Load Switch
- DC - DC Converter

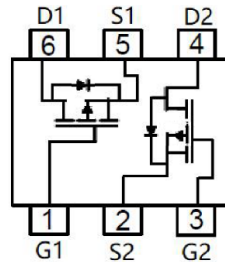
1: G1      3: G2      5: S1  
2: S2      4: D2      6: D1

### MARKING



6801:Device Code

### P-CHANNEL MOSFET



### MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_a = 25\text{ }^\circ\text{C}$	-20	-	V
$V_{GS}$	Gate-Source Voltage	$T_a = 25\text{ }^\circ\text{C}$	-	$\pm 12$	V
$I_D^*$	Drain Current	$T_a = 25\text{ }^\circ\text{C}, V_{GS} = -4.5\text{ V}$	-	-2.0	A
$I_{DM}^{*,**,***}$	Pulsed Drain Current	$T_a = 25\text{ }^\circ\text{C}, V_{GS} = -2.5\text{ V}$	-	-8.0	A
$P_{tot}^*$	Total Power Dissipation	$T_a = 25\text{ }^\circ\text{C}$	-	0.83	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	150	$^\circ\text{C} / \text{W}$

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$
- \*\* Pulse width  $\leq 10\text{ }\mu\text{s}$ , duty cycle  $\leq 1\%$
- \*\*\* limited by bonding wire

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\ \mu\text{A}$	-20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\ \mu\text{A}$	-0.4	-0.65	-1.0	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = -19\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 12\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	Channel On-State Resistance	$V_{GS} = -4.5\text{ V}, I_D = -2.0\text{ A}$	-	120	150	m $\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -1.5\text{ A}$	-	160	230	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = -2.0\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = -2.0\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	7.5	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	2.5	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -10\text{ V}$ Frequency = 1 MHz	-	250	-	pF
$C_{oss}$	Output Capacitance		-	38	-	
$C_{riss}$	Reverse Transfer Capacitance		-	18	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -10\text{ V}, V_{GEN} = -4.5\text{ V},$ $R_G = 3\ \Omega, I_{DS} = -2.0\text{ A}$	-	11	-	ns
$t_r$	Turn-on Rise Time		-	52	-	
$t_d(off)$	Turn-off Delay Time		-	12	-	
$t_f$	Turn-off Fall Time		-	19	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V},$ $I_{DS} = -2.0\text{ A}$	-	5.3	-	nC
$Q_{gs}$	Gate-Source Charge		-	1.0	-	
$Q_{gd}$	Gate-Drain Charge		-	1.3	-	

**Notes:**

 a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ 

b : Guaranteed by design, not subject to production testing

## Typical Characteristics

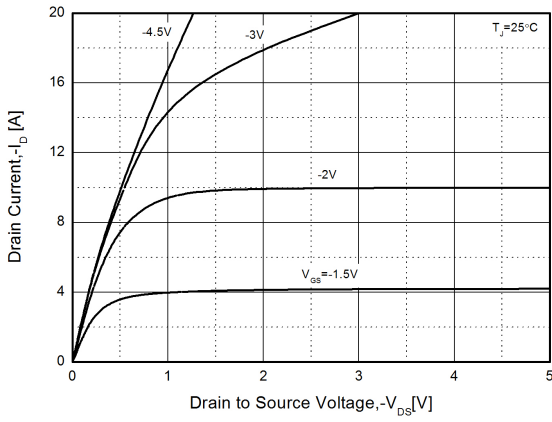


Figure1. Output Characteristics

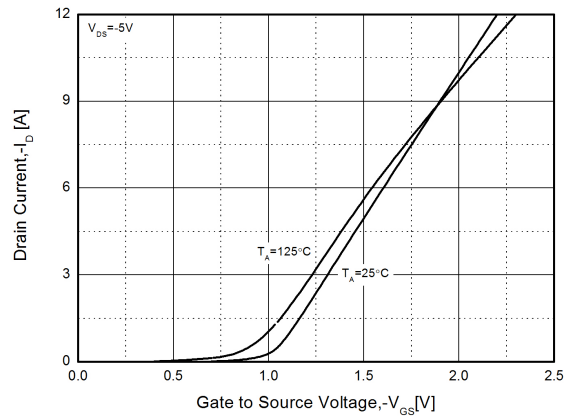


Figure2. Transfer Characteristics

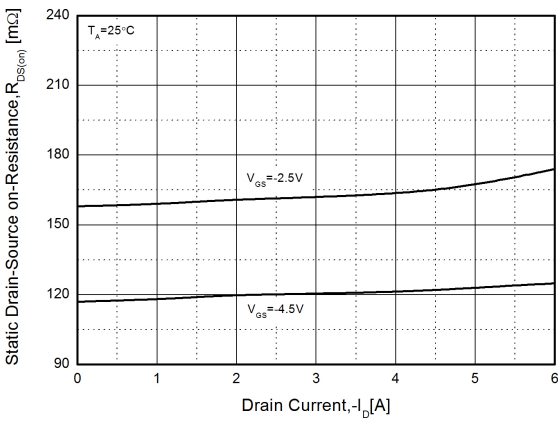


Figure3. Rdson-Drain Current

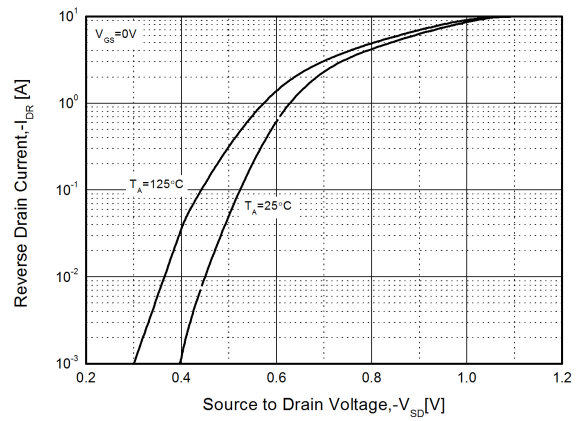


Figure4. Typical Source-Drain Diode Forward Voltage

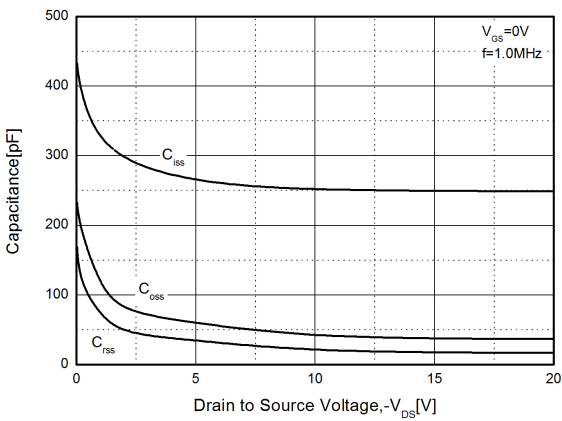


Figure5. Capacitance Characteristics

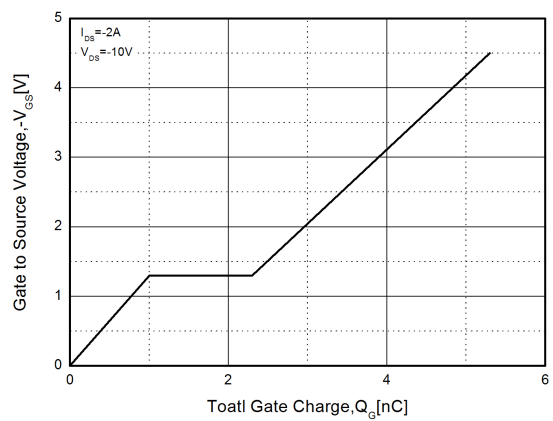


Figure6. Gate Charge

# KY6801

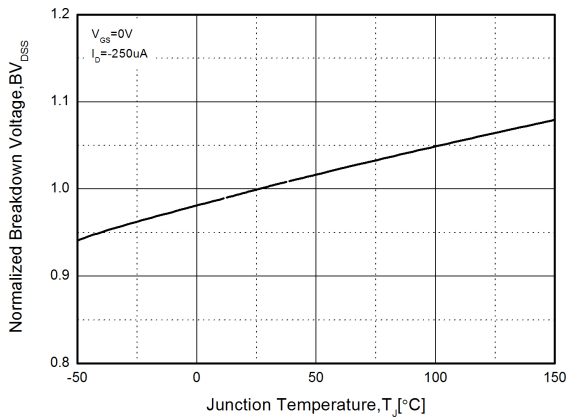


Figure7. Normalized Breakdown Voltage vs. Temperature

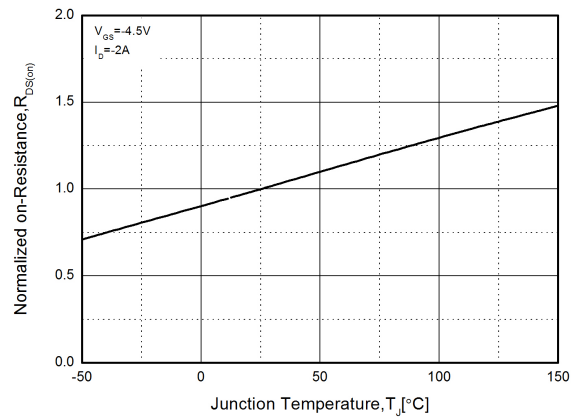


Figure8. Normalized on Resistance vs. Temperature

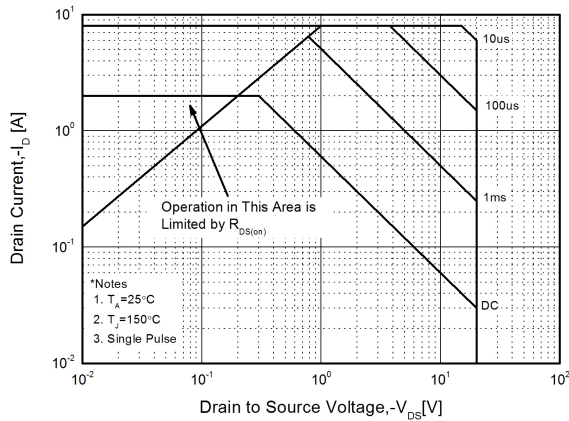


Figure9. Safe Operation Area

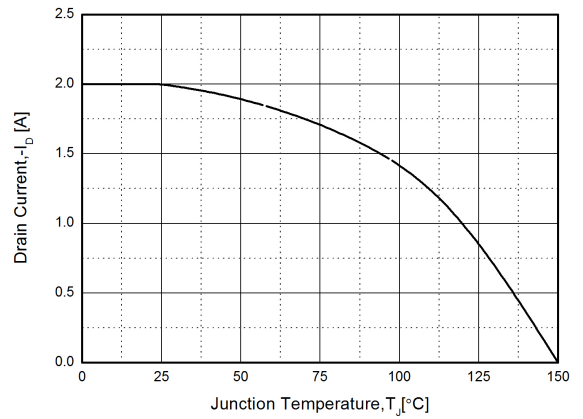


Figure10. Maximum Drain Current vs. Junction Temperature

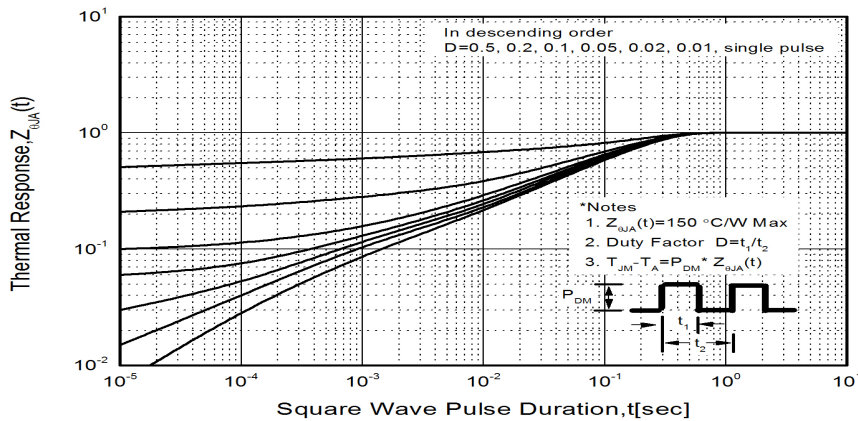
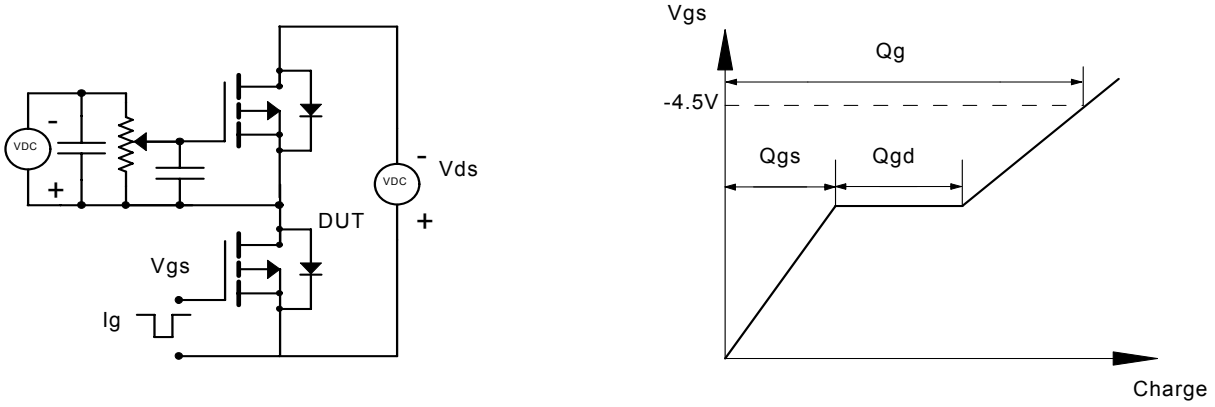
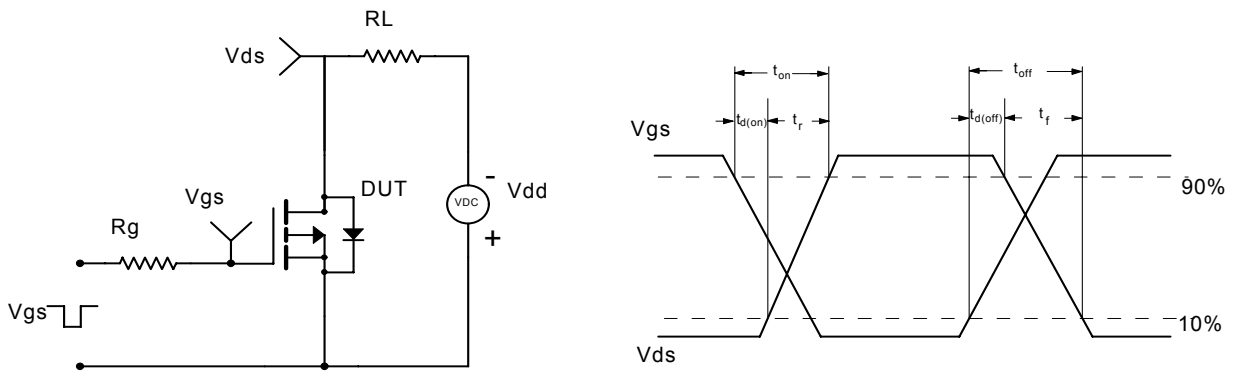


Figure11. Transient Thermal Response Curve

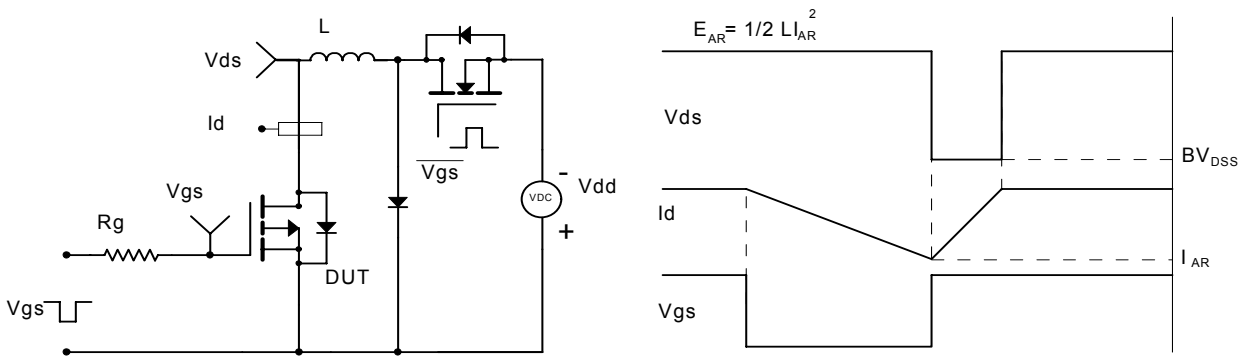
**Typical Performance Characteristics**



**Figure1:Gate Charge Test Circuit & Waveform**

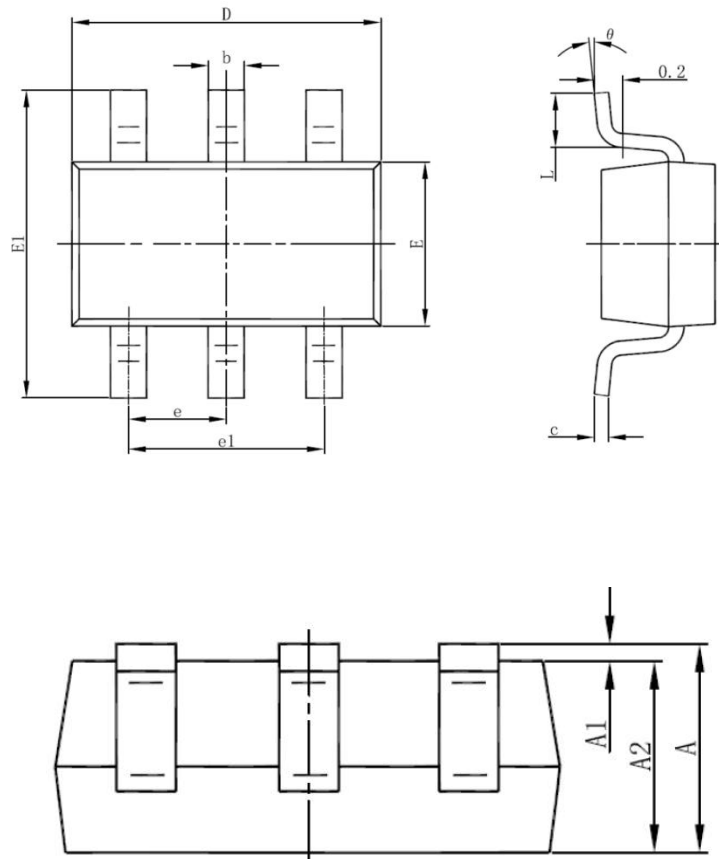


**Figure 2: Resistive Switching Test Circuit & Waveforms**



**Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms**

SOT-23-6L package



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°