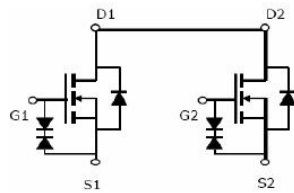


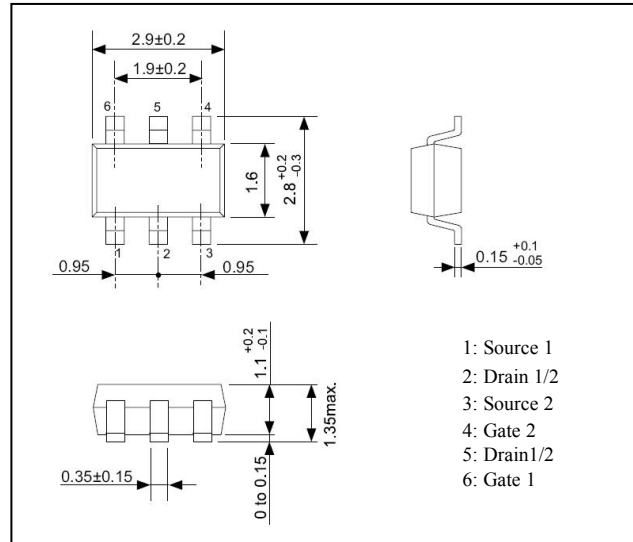
## Features

- Low On resistance.
- 4.5V drive.
- RoHS compliant.



## Package Dimensions

SOT-23-6 unit: mm



## Specifications

**Absolute Maximum Ratings** at  $T_a=25^{\circ}\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		30	V
Gate-to-Source Voltage	$V_{GSS}$		±20	V
Drain Current (DC)	$I_D$		3.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{S}$ , duty cycle $\leq 1\%$	20	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (1000mm <sup>2</sup> ×0.8mm) 1unit	1.15	W
Channel Temperature	$T_{ch}$		150	°C
Storage Temperature	$T_{stg}$		-55~+150	°C

**Electrical Characteristics** at  $T_a=25^{\circ}\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	30	-	-	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$	-	-	1	uA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$	-	-	±100	uA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.5	2	2.5	V
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	$I_D=3.5\text{A}$ , $V_{GS}=10\text{V}$	-	34	50	mΩ
	$R_{DS(ON)}$	$I_D=2\text{A}$ , $V_{GS}=4.5\text{V}$	-	60	70	mΩ
Input Capacitance	$C_{iss}$	$V_{DS}=15\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$	-	170	210	pF
Output Capacitance	$C_{oss}$		-	35	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	23	-	pF

**Electrical Characteristics** at  $T_a=25^{\circ}\text{C}$  (Continued)

# Si6810

Parameter	Symbol	Conditions	Ratings			Unit
			min	Typ	max	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, R_L=4.2\Omega, R_{GEN}=3\Omega,$ $V_{DS}=5V$	-	4.5	-	nS
Rise Time	$t_r$		-	1.5	-	nS
Turn-off Delay Time	$t_{d(off)}$		-	18.5	-	nS
Fall Time	$t_f$		-	15.5	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=3.5A$	-	4.05	5	nC
Gate-to-Source Charge	$Q_{gs}$		-	0.55	-	nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$		-	1	-	nC
Diode Forward Voltage	$V_{SD}$	$I_S=1A, V_{GS}=0V$	-	0.79	1	V

## Typical Characteristics at $T_a=25^\circ C$

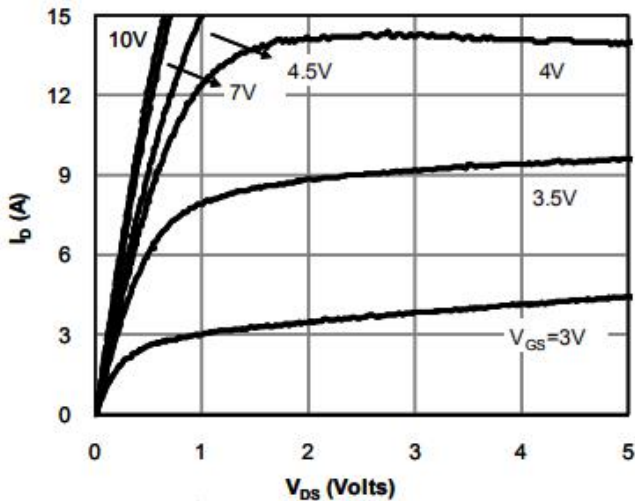


Fig 1: On-Region Characteristics (Note E)

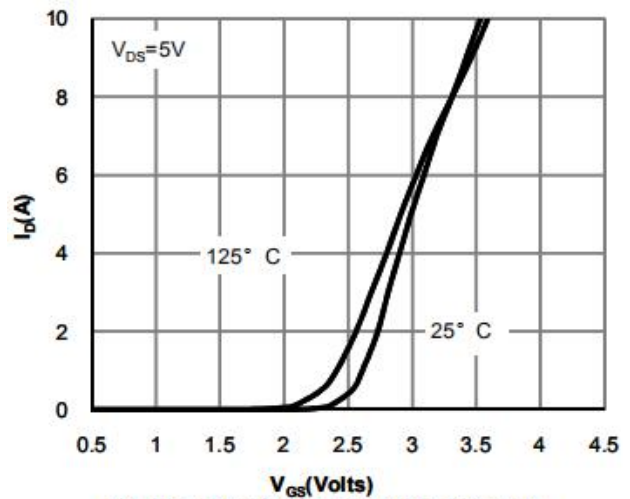


Figure 2: Transfer Characteristics (Note E)

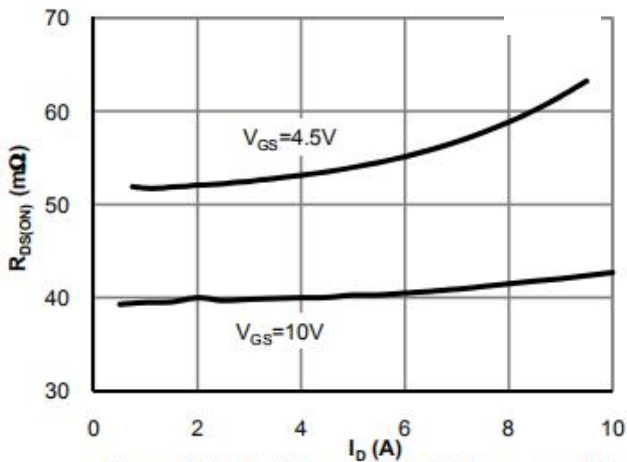


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

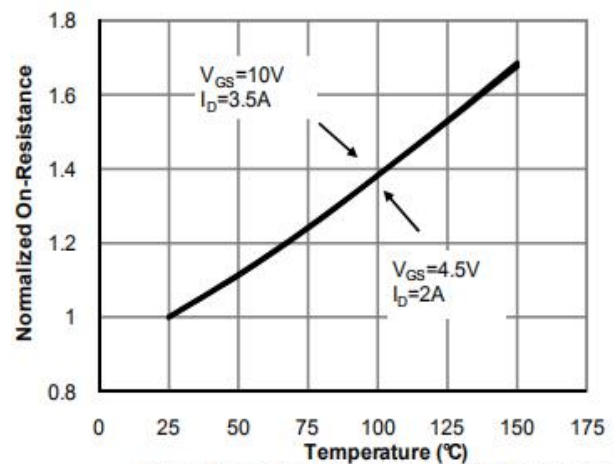


Figure 4: On-Resistance vs. Junction Temperature (Note E)

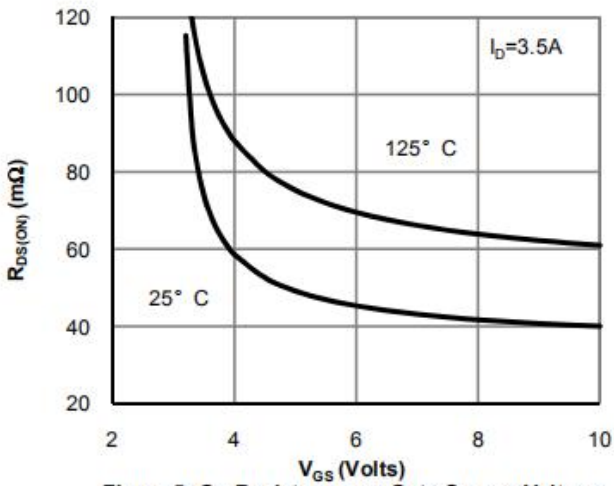


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

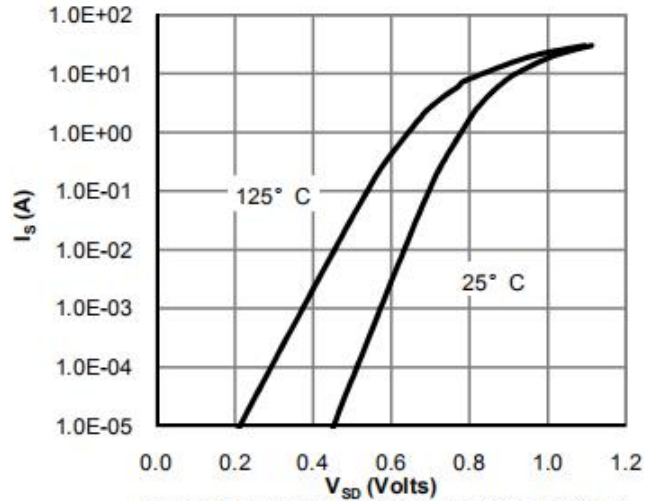


Figure 6: Body-Diode Characteristics (Note E)

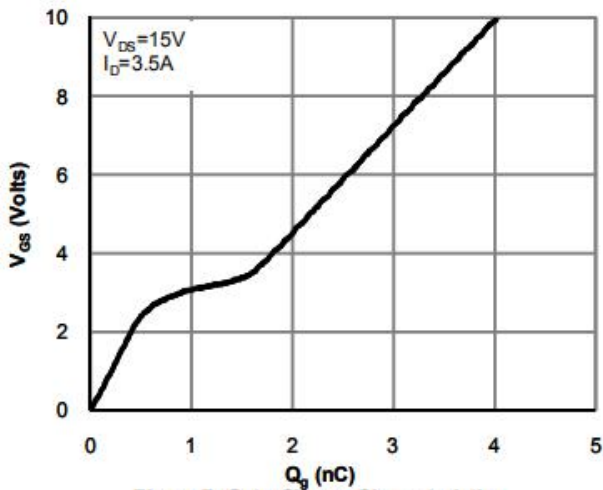


Figure 7: Gate-Charge Characteristics

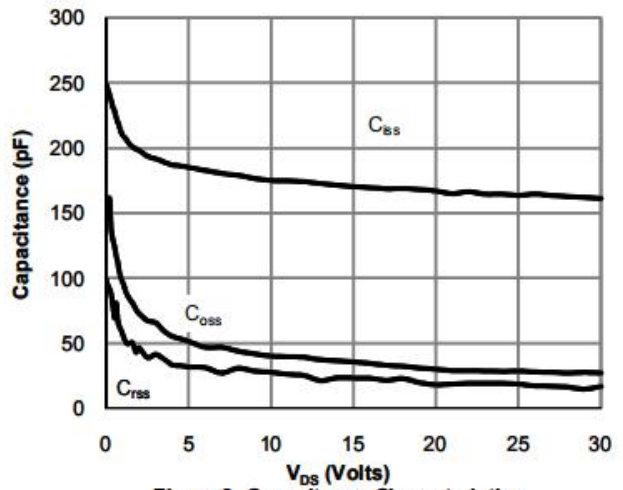


Figure 8: Capacitance Characteristics

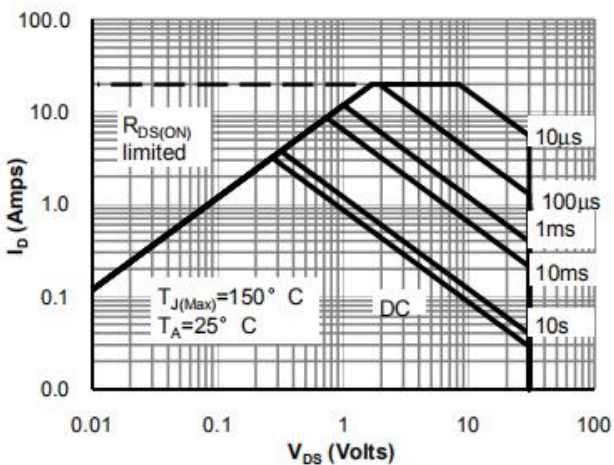


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

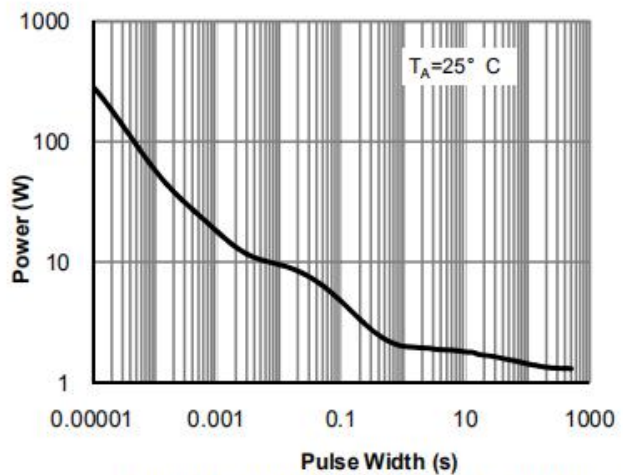


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

