

## FEATURES

|  $V_{DS} = 20V, I_D = 7A, R_{DS(ON)} < 1.8m\Omega @ V_{GS} = 4.5V$

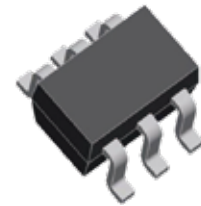
|  $R_{DS(ON)} < 30m\Omega @ V_{GS} = 2.5V$

| High Power and current handling capability

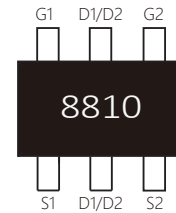
| Lead free product is acquired

| Surface Mount Package

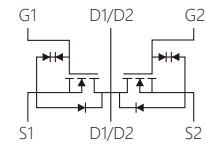
| ESD



SOT-23-6



Marking



Schematic Symbol

## APPLICATION

| PWM applications

| Load switch

| Power management

## APPROVALS

**RoHS** Compliance with 2011/65/EU

**HF** Compliance with IEC61249-2-21:2003

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ )

Parameter	Symbol	Value	Unit	
Drain-source voltage	$V_{DS}$	20	V	
Continuous drain current ( $T_J = 150^\circ C$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ C$	7.0	A
		$T_A = 70^\circ C$	4.1	A
Pulsed Drain Current	$I_{DM}$	19	A	
Gate-source voltage	$V_{GS}$	$\pm 10$	V	
Power dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ C$	0.75	W
		$T_A = 70^\circ C$	0.5	W
Maximum junction-to-ambient Steady-State <sup>a</sup>	$R_{\theta JA}$	151	$^\circ C/W$	
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to 150	$^\circ C$	

a. Surface mounted on 1" x 1" FR4 board

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

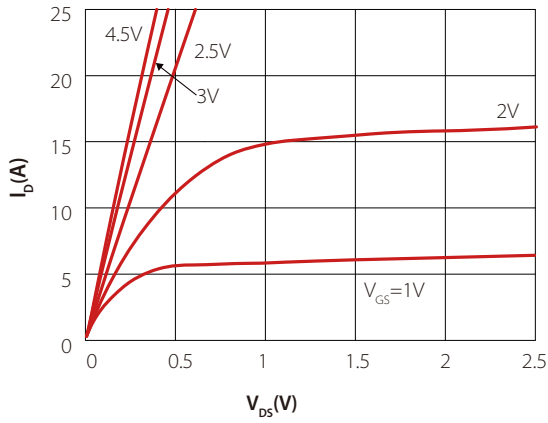
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Off Characteristic</b>						
Drain-source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V			±10	uA
<b>ON Characteristics</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4	0.7	1.0	V
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A		13.5	18	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A		21	30	mΩ
Forward transconductance <sup>a</sup>	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =1A		10		S
<b>Dynamic Characteristics<sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, F=1.0MHz		545		pF
Output Capacitance	C <sub>oss</sub>			103		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			90		pF
<b>Switching Characteristics</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =1A, V <sub>GEN</sub> =5V R <sub>GEN</sub> =3ohm		0.5		nS
Turn-On Rise Time	t <sub>r</sub>			1		nS
Turn-Off Delay Time	t <sub>d(off)</sub>			12		nS
Turn-Off Fall Time	t <sub>f</sub>			4		nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =4.8A		8		nC
Gate- Source Charge	Q <sub>gs</sub>			2.5		nC
Gate- Drain Charge	Q <sub>gd</sub>			3.0		nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage <sup>(Note 3)</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =4A		0.75	1.0	V

**Notes**

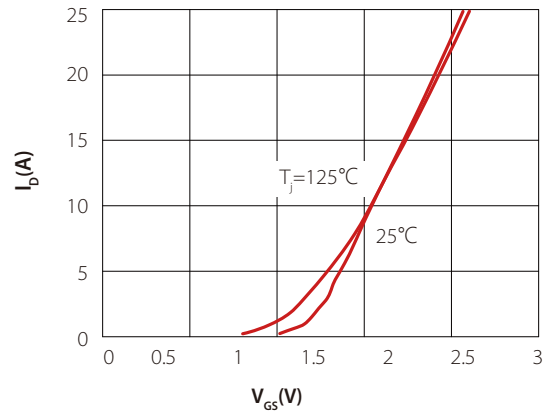
- a. Pulse test: Pulse width < 300 μs, duty cycle < 2 %  
b. Guaranteed by design, not subject to production testing

# PARAMETER CHARACTERISTIC CURVE

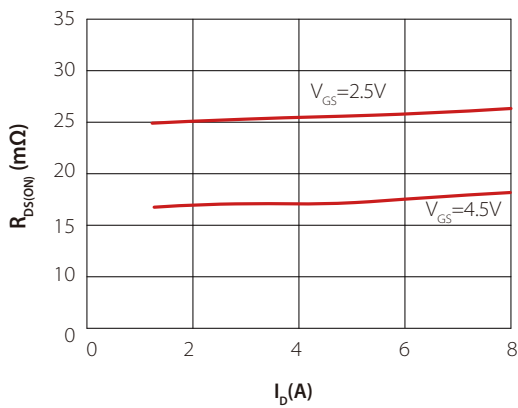
**Figure 1: Output Characteristics**



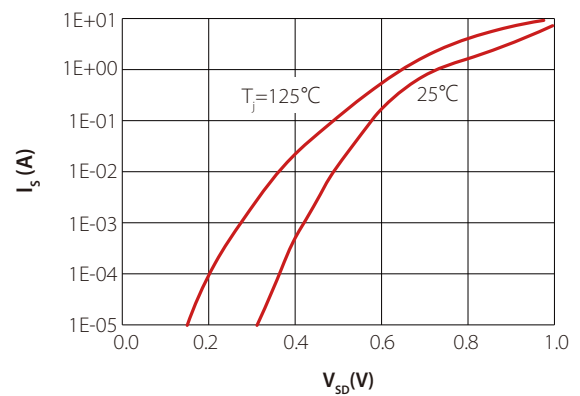
**Figure 2: Typical Transfer Characteristics**



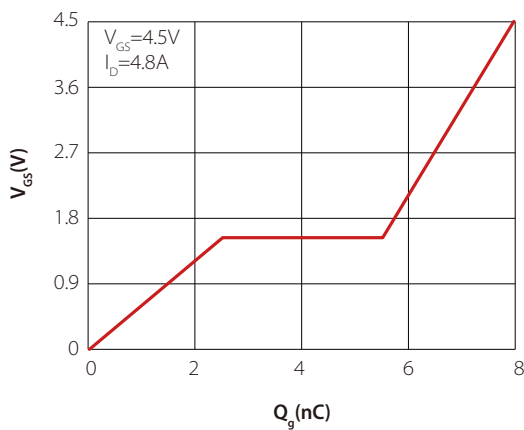
**Figure 3: On-resistance vs. Drain Current**



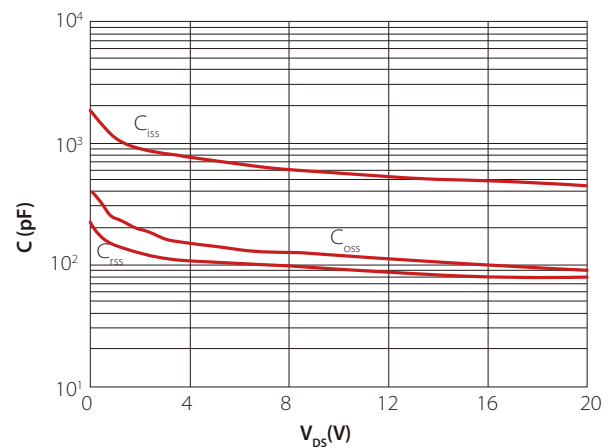
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

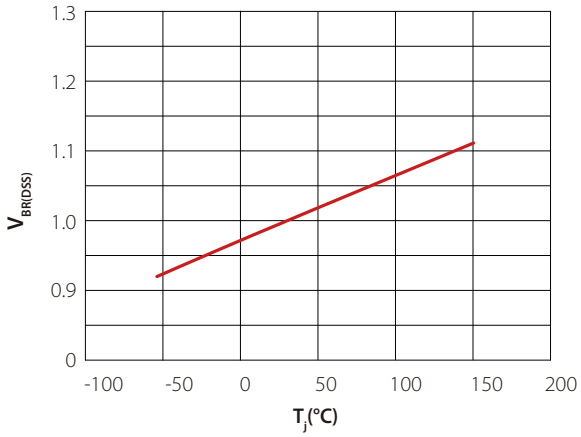


**Figure 6: Capacitance Characteristics**

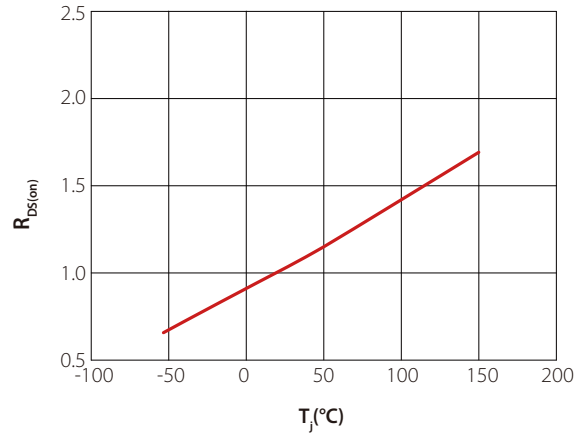


0.8 1.0 1.2

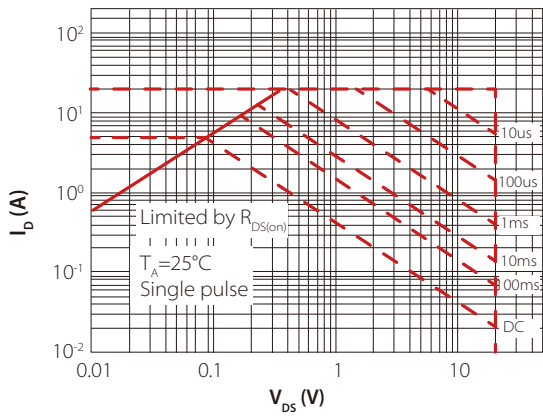
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



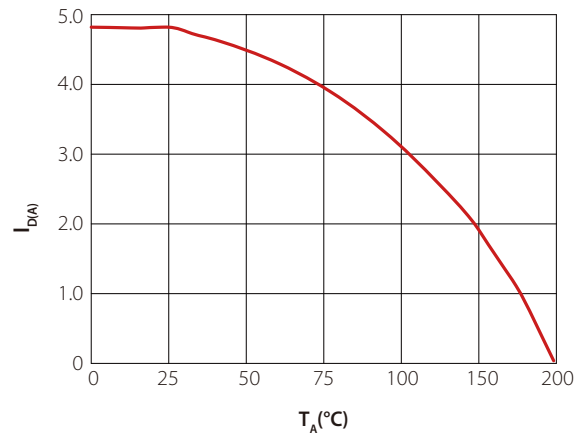
**Figure 8: Normalized on Resistance vs. Junction Temperature**



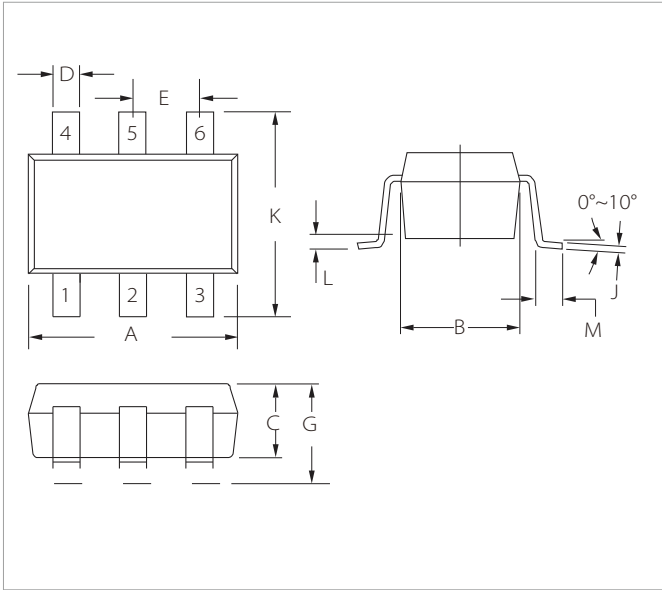
**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**

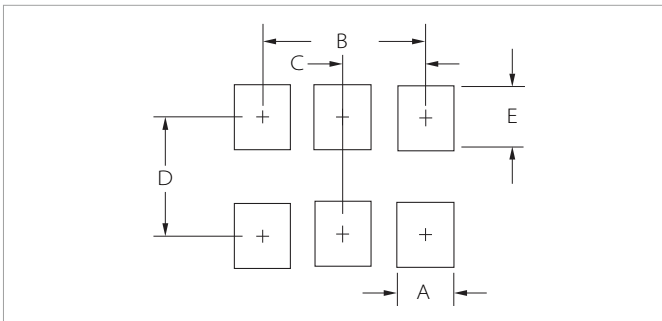


## SOT-23-6 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.50	1.75	0.059	0.070
C	0.90	1.30	0.036	0.051
D	0.25	0.50	0.010	0.020
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
	Nominal	Nominal
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM8810	SOT-23-6	3000PCS	7"

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