

Descriptions

N-channel Double MOSFET in a SOT23-6 Plastic Package. It is ESD protected.

Features

advanced trench technology to provide excellent RDS(on), low gate charge.

$V_{DSS}=20V / V_{GSS}=\pm 12V \quad I_D=7A$

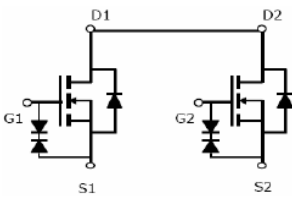
$R_{DS(ON)}=16m\Omega(\text{typ.})@V_{GS}=4.5V$

$R_{DS(ON)}=19m\Omega(\text{typ.})@V_{GS}=2.5V$

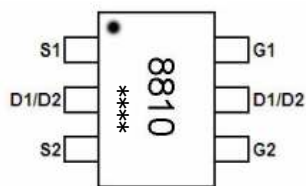
Applications

Use as Load Switch or PWM application.

Equivalent Circuit



Pinning



Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Drain Current - Continuous		$I_D(T_a=25^\circ\text{C})$	7.0	A
Drain Current - Continuous		$I_D(T_a=70^\circ\text{C})$	5.7	
Drain Current – Pulsed		I_{DM}	25	A
Gate-Source Voltage		V_{GS}	± 8.0	V
Power Dissipation		$P_D(T_a=25^\circ\text{C})$	1.5	W
Power Dissipation		$P_D(T_a=70^\circ\text{C})$	1.0	
Junction-to-Ambient ^A	$t \leq 10\text{s}$	$R_{\theta JA}$	83	$^\circ\text{C/W}$
Junction-to-Ambient ^{AD}	Steady-State		120	
Junction-to-Lead	Steady-State	$R_{\theta JL}$	70	$^\circ\text{C/W}$
Junction and Storage Temperature Range		T_j, T_{stg}	-55 ~ 150	$^\circ\text{C}$

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

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$	$I_D=250\mu\text{A}$	20			V	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16\text{V}$	$V_{GS}=0\text{V}$			1.0	μA	
Drain-Source Leakage Current		$V_{DS}=16\text{V}$	$V_{GS}=0\text{V}$			10	μA	
		$T_j=85^\circ\text{C}$						
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}$	$V_{DS}=0\text{V}$			± 10	μA	
On state drain current	$I_{D(ON)}$	$V_{GS}=4.5\text{V}$	$V_{DS}=5\text{V}$	25			A	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=250\mu\text{A}$	0.45	0.6	1.0	V	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5\text{V}$	$I_D=6.0\text{A}$		16	20	m Ω	
		$V_{GS}=2.5\text{V}$	$I_D=6.0\text{A}$		19	25		
Forward Transconductance	g_{FS}	$V_{DS}=5.0\text{V}$	$I_D=7.0\text{A}$		50		S	
Forward On Voltage	V_{SD}	$V_{GS}=0\text{V}$	$I_S=1.0\text{A}$			1.3	V	
Maximum Body-Diode Continuous Current	I_S					2	A	
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$	$V_{GS}=0\text{V}$		1295		pF	
Output Capacitance	C_{oss}			$f=1.0\text{MHz}$		160		
Reverse Transfer Capacitance	C_{rss}							87

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		1.8		$K\Omega$
Total Gate Charge	Q_g	$V_{DS}=10V$ $V_{GS}=4.5V$ $I_D=7.0A$		10	14	nC
Gate Source Charge	Q_{gs}			4.2		
Gate Drain Charge	Q_{gd}			2.6		
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=10V$ $V_{GS}=4.5V$ $R_G=3.0\Omega$ $R_L=1.54\Omega$		280		ns
Rise Time	t_r			328		ns
Turn-off Delay Time	$t_{d(off)}$			3.76		μs
Fall Time	t_f			2.24		μs
Body Diode Reverse Recovery Time	t_{rr}	$I_F=7A$ $di/dt=100A/ms$ $V_{GS}=-9V$		31		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=7A$ $di/dt=100A/ms$ $V_{GS}=-9V$		6.8		nC

Notes:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 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.

B. The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using $\leq 10\text{s}$ junction-to-ambient thermal resistance.

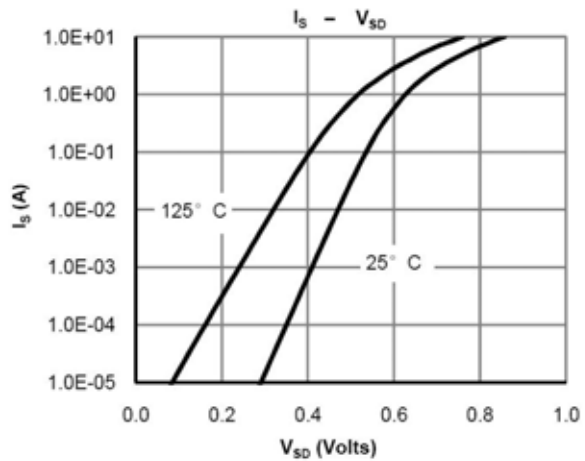
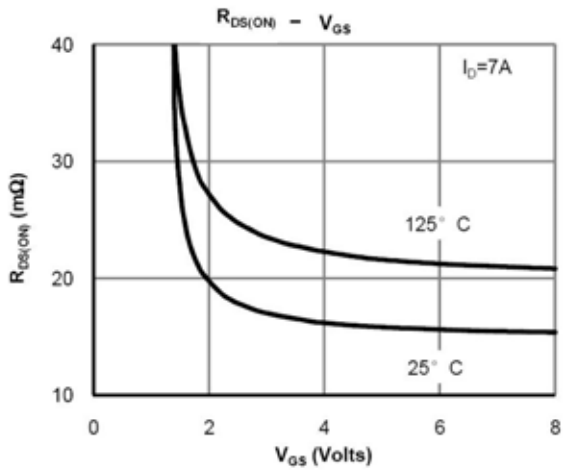
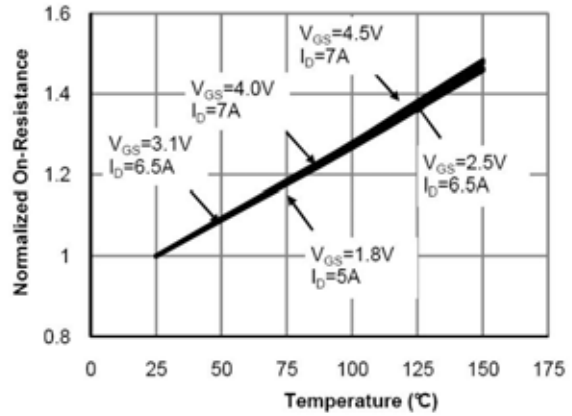
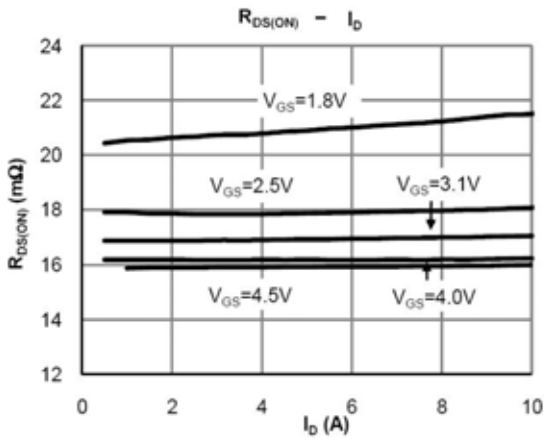
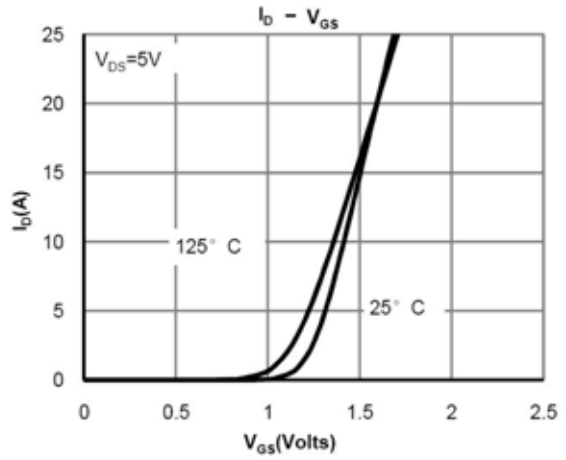
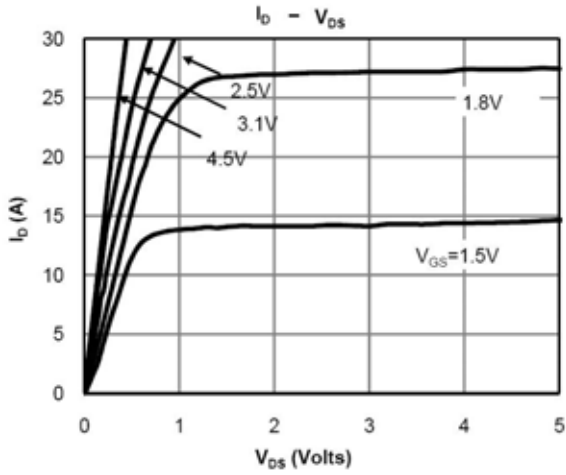
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^{\circ}\text{C}$.

D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

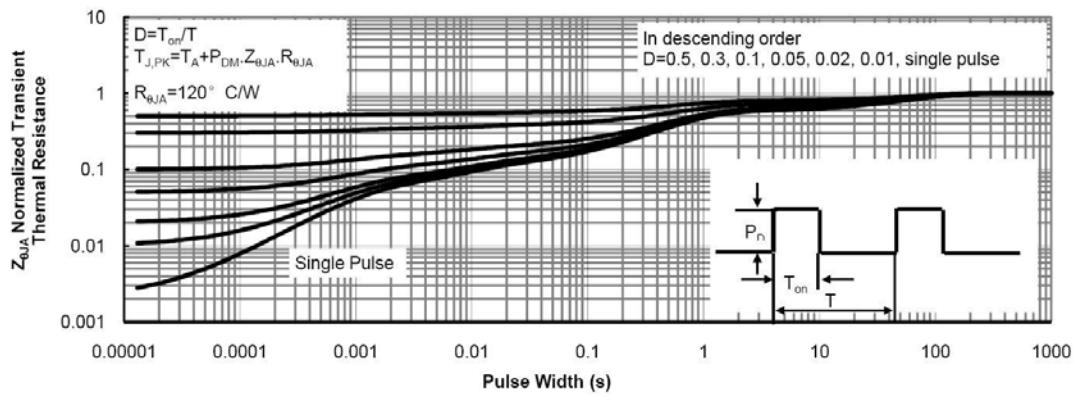
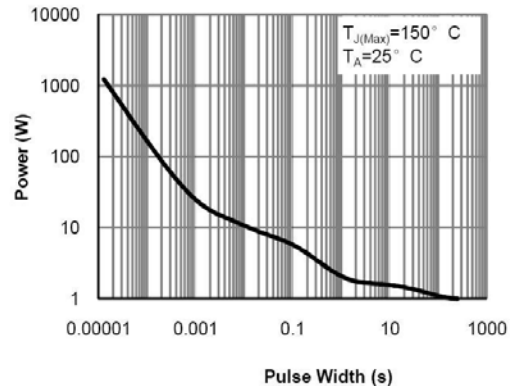
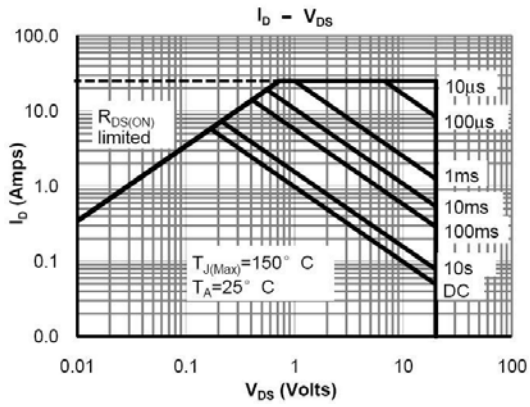
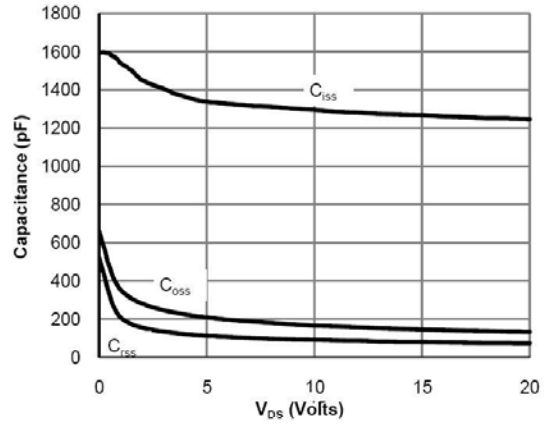
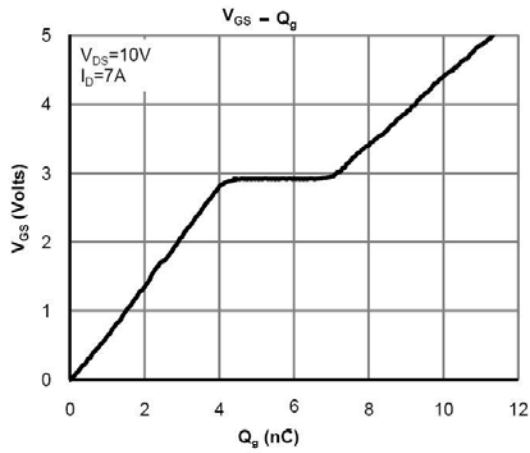
E. The static characteristics in Figures 1 to 6 are obtained using $<300\text{ms}$ pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}=150^{\circ}\text{C}$. The SOA curve provides a single pulse rating.

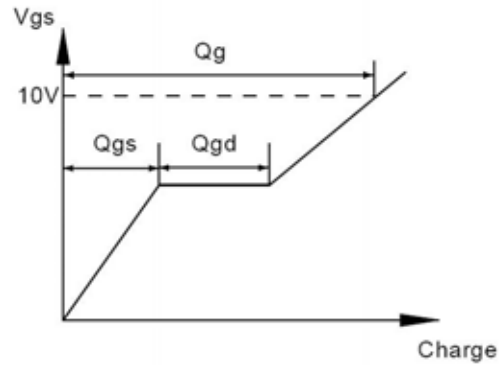
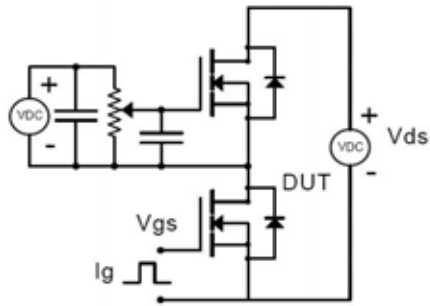
RATING AND CHARACTERISTICS CURVES (RM8810)



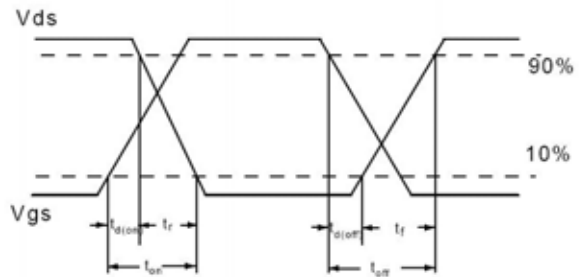
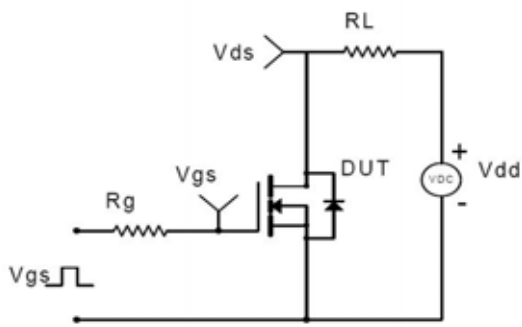
RATING AND CHARACTERISTICS CURVES (RM8810)



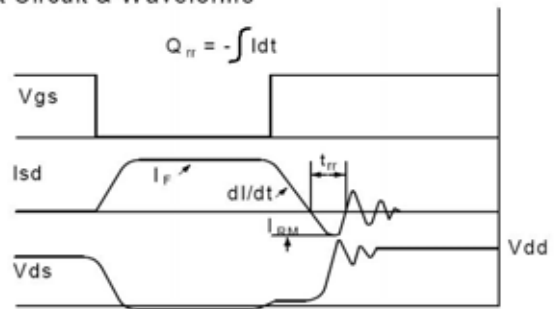
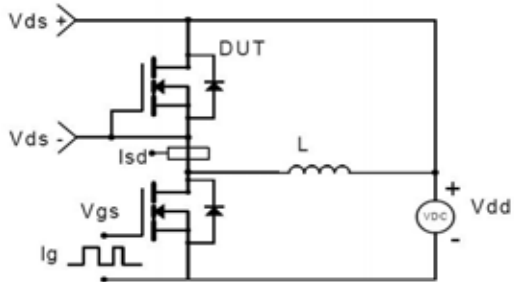
Test circuit and waveform



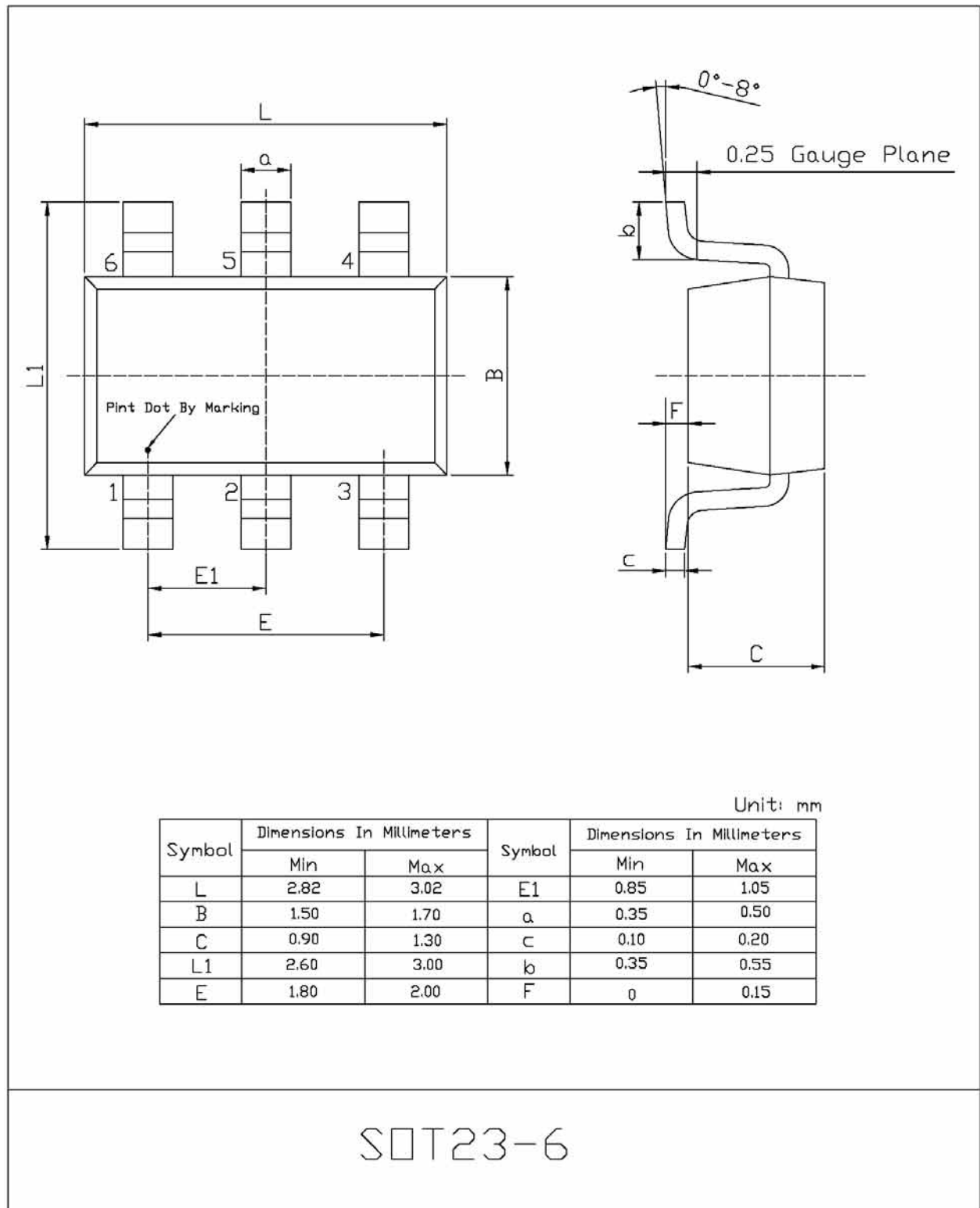
Resistive Switching Test Circuit & Waveforms



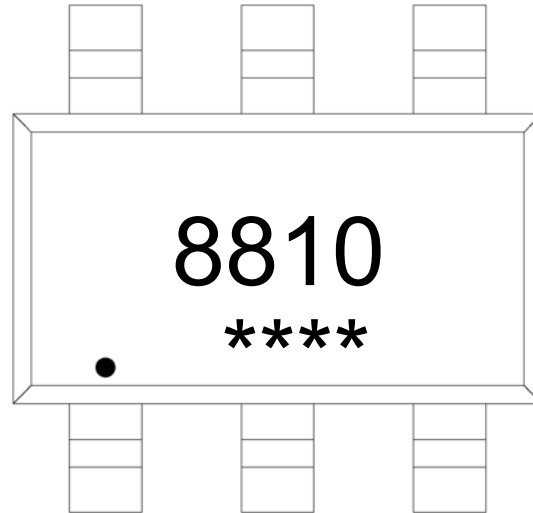
Diode Recovery Test Circuit & Waveforms



Package Dimensions



Marking Instructions

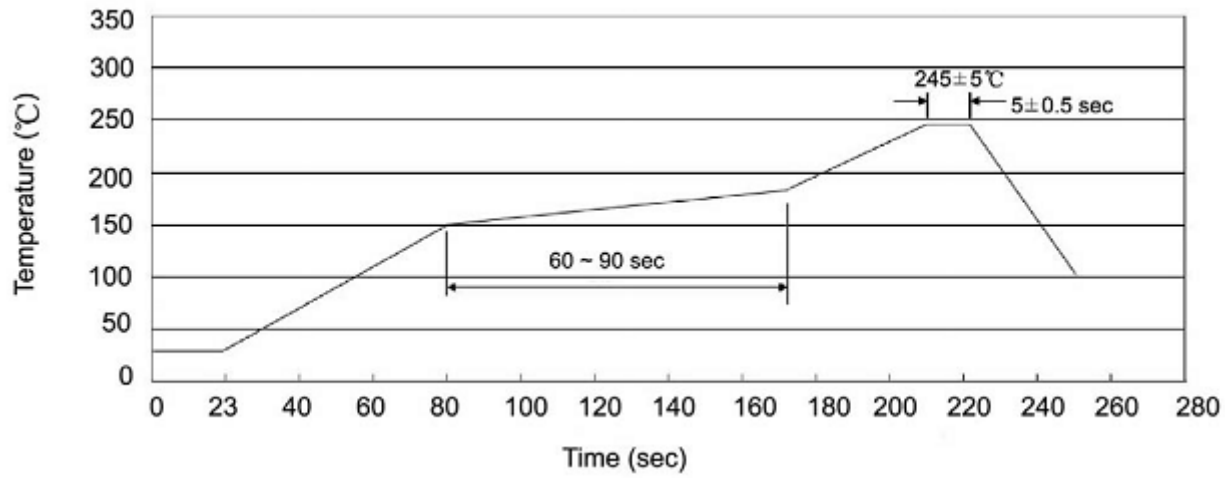


Note:

8810: Product Type.

****: Date code ç change with manufacturing date.

Temperature Profile for IR Reflow Soldering(Pb-Free)



Notes:

1. Preheating: 25~150 °C, Time: 60~90sec.
2. Peak Temp.: 245 ± 5°C, Duration: 5 ± 0.5sec.
3. Cooling Speed: 2~10°C/sec.

Resistance to Soldering Heat Test Conditions

Temp: 260 ± 5°C Time: 10 ± 1 sec

Packaging SPEC.

REEL

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT23-5/6	3,000	10	30,000	4	120,000	7" × 8	210×205×205	445×230×435

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