

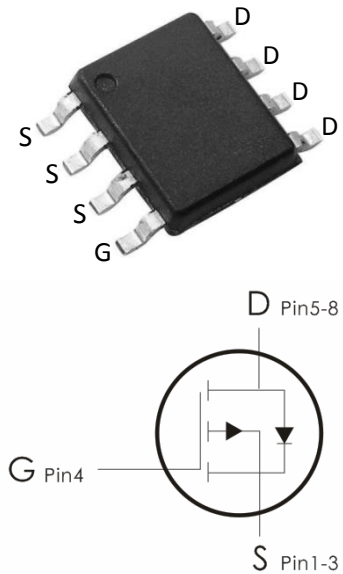
Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-30V, I_D=-15A, R_{DS(on)} < 11m\Omega @ V_{GS}=-20V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}^A$	-15	A
	Continuous Drain Current- $T_C=70^\circ\text{C}^A$	-12	
I_{DM}	Pulsed Drain Current ^B	-80	
P_D	Power Dissipation ^A ($T_a=25^\circ\text{C}$)	3	W
	Power Dissipation ^A ($T_a=100^\circ\text{C}$)	2.1	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA} (t \leq 10s)$	Thermal Resistance, Junction to Ambient ^A	40	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$		75	

$R_{\theta JL}$	Maximum Junction-to-Lead ^C	30	°C/W
-----------------	---------------------------------------	----	------

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-30		---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-24V	---	---	-1	μ A
		V _{GS} =0V, V _{DS} =-24V, T _J =55℃			-5	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics ³						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =-250 μ A	-1	-1.3	-3	V
I _D	On state drain current	V _{GS} =-10V V _{DS} =-5V	80			A
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =-10V, I _D =-15A	---	8.5	12	m Ω
		V _{GS} =-10V I _D =-10A T _J =125℃		11	16	
		V _{GS} =-20V I _D =-15A		8	11	
		V _{GS} =-4.5V I _D =-10A	---	13		
G _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-10A		30	---	S
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	2476	2900	pF
C _{oss}	Output Capacitance		---	523	---	
C _{rss}	Reverse Transfer Capacitance		---	325	---	
Switching Characteristics ⁴						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-15V, V _{GS} =-10V RL=1.25 Ω , R _{GEN} =3 Ω	---	14.4	---	ns
t _r	Rise Time		---	11	---	ns
t _{d(off)}	Turn-Off Delay Time		---	23.6	---	ns

t_f	Fall Time		---	14	---	ns
Q_g	Total Gate Charge	$V_{DS}=-15V, V_{GS}=-10V, I_D=-10A$	---	47.2	55	nC
Q_{gs}	Gate-Source Charge		---	12	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	14	---	nC
R_g	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$		2	3	Ω
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=-1A,$	---	-0.72	-1	V
I_S	Diode Forward Current	---	---	-5.2	A	

Notes:

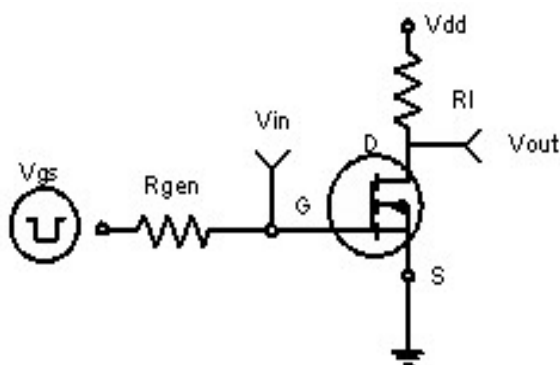
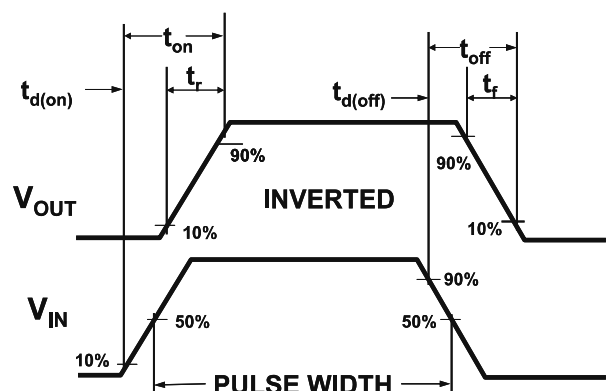
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.

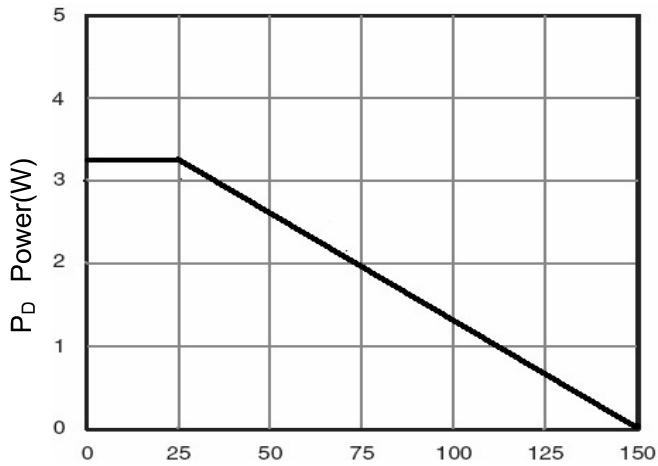
B: Repetitive rating, pulse width limited by junction temperature.

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

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

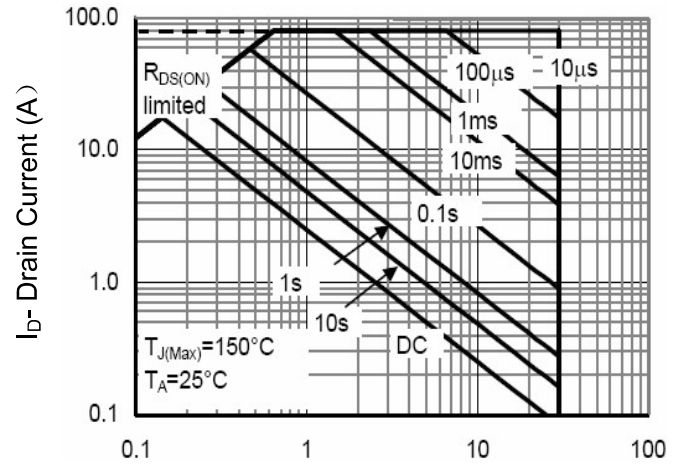
E. These tests are performed with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The SOA curve provides a single pulse rating. Rev 1 : Sept 2005

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

Figure 1 Switching Test Circuit

Figure 2 Switching Waveforms



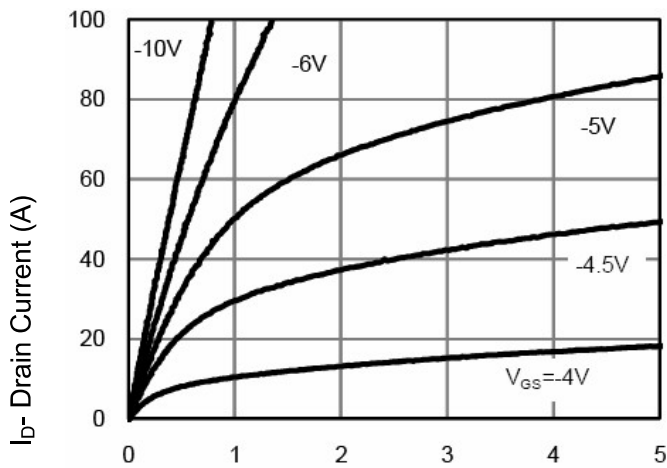
T_J -Junction Temperature(°C)

Figure 3 Power Dissipation



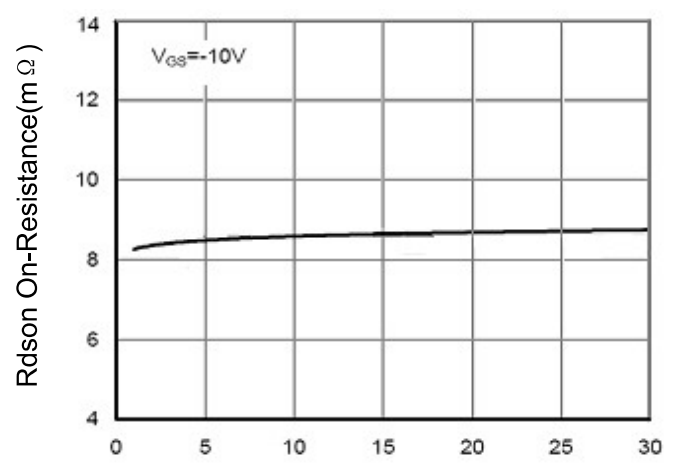
V_{DS} Drain-Source Voltage (V)

Figure 4 Safe Operation Area



V_{DS} Drain-Source Voltage (V)

Figure 5 Output Characteristics



I_D Drain Current (A)

Figure 6 Drain-Source On-Resistance

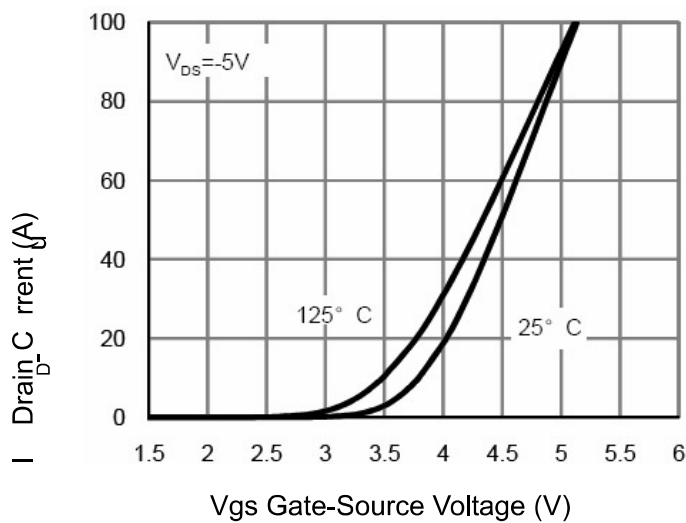


Figure 7 Transfer Characteristics

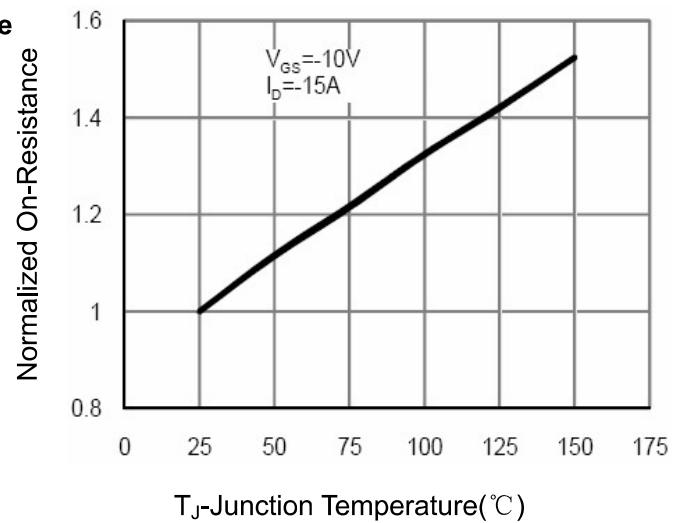


Figure 8 Drain-Source On-Resistance

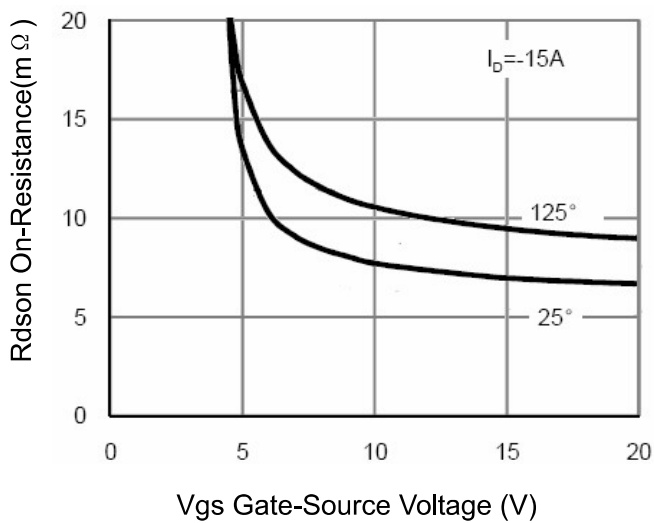


Figure 9 Rdson vs Vgs

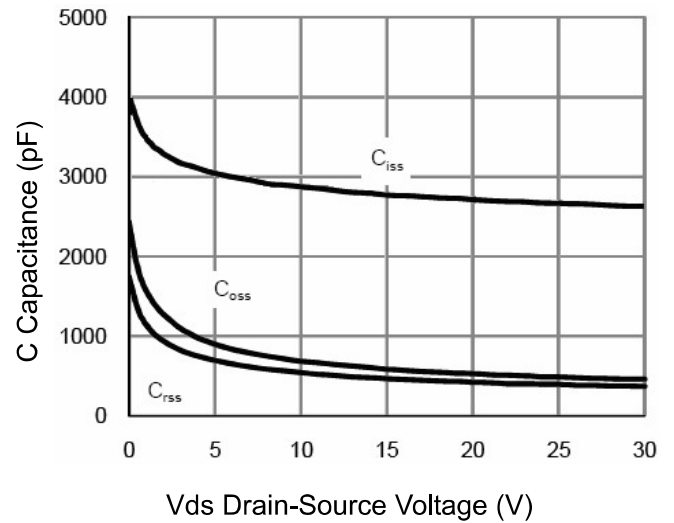


Figure 10 Capacitance vs Vds

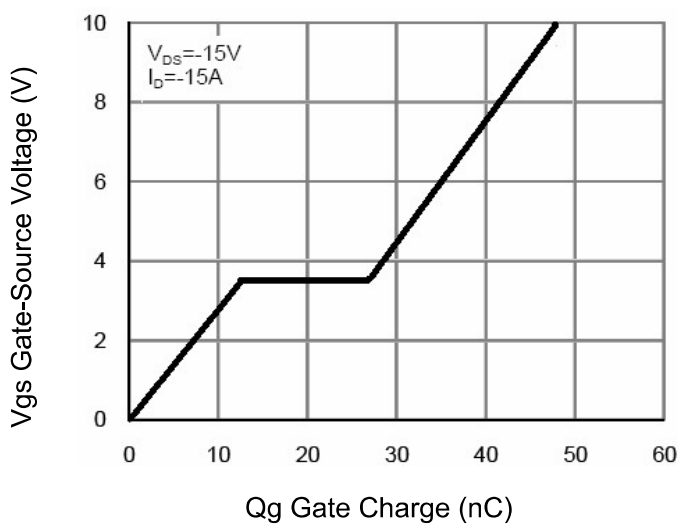


Figure 11 Gate Charge

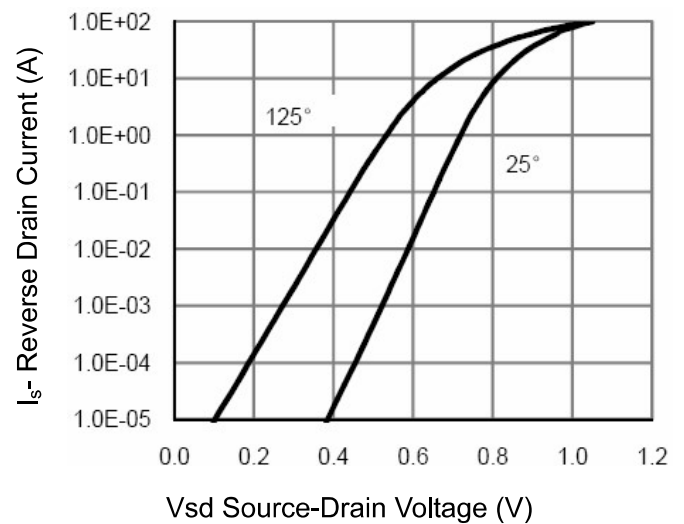
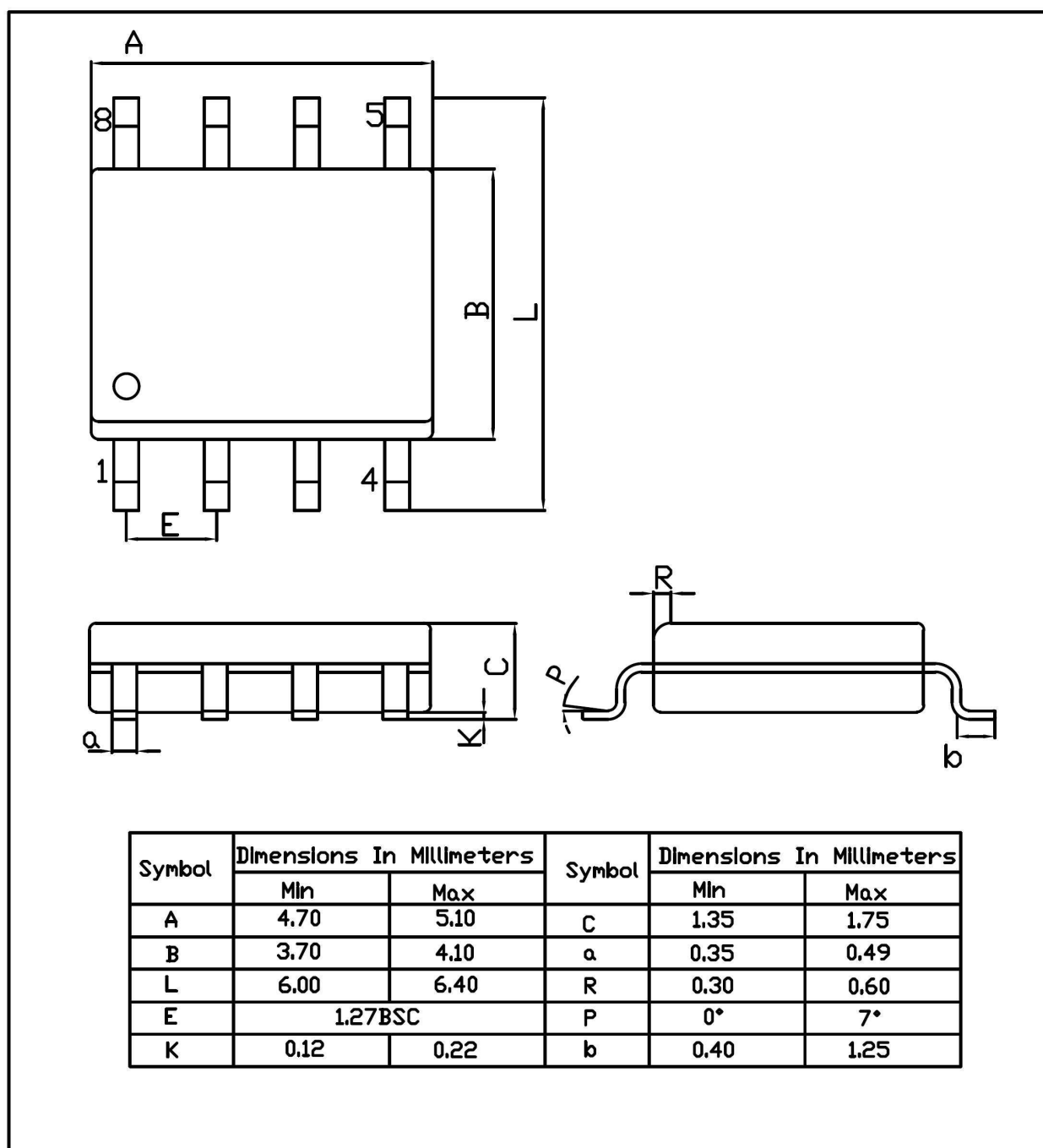


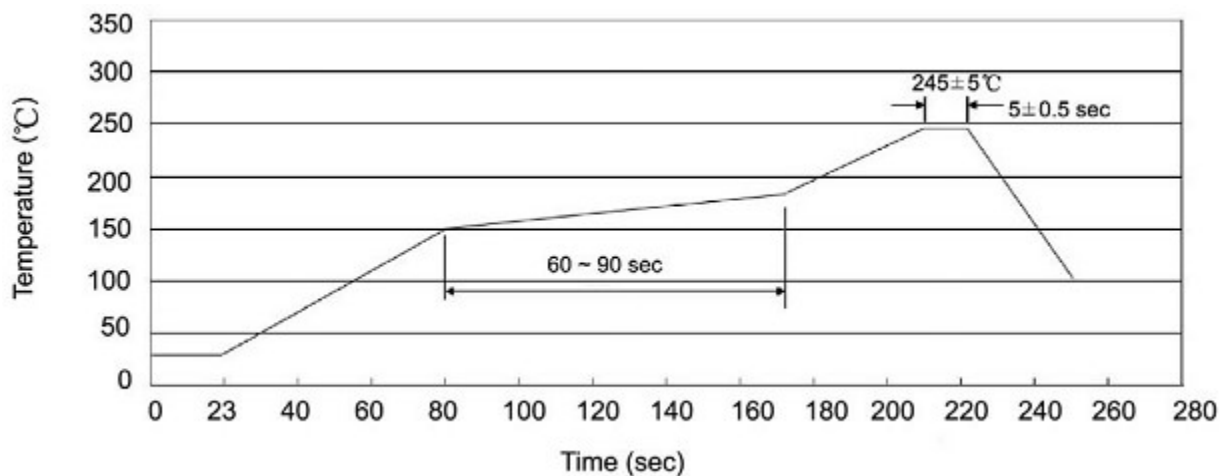
Figure 12 Source- Drain Diode Forward

SOP-8

Unit:mm



回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 $25 \sim 150^\circ\text{C}$ ，时间 $60 \sim 90 \text{ sec}$;
- 2、峰值温度 $245 \pm 5^\circ\text{C}$ ，时间持续为 $5 \pm 0.5 \text{ sec}$;
- 3、焊接制程冷却速度为 $2 \sim 10^\circ\text{C}/\text{sec}$.

Note:

- 1.Preheating: $25 \sim 150^\circ\text{C}$, Time: $60 \sim 90 \text{ sec}$.
- 2.Peak Temp.: $245 \pm 5^\circ\text{C}$, Duration: $5 \pm 0.5 \text{ sec}$.
3. Cooling Speed: $2 \sim 10^\circ\text{C}/\text{sec}$.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度: $260 \pm 5^\circ\text{C}$ 时间: $10 \pm 1 \text{ sec}$.Temp.: $260 \pm 5^\circ\text{C}$ Time: $10 \pm 1 \text{ sec}$ 

0086-0755-8278-9056

www.doingter.cn