

# SLV3407T

## -30V P-Channel MOSFET

### General Description

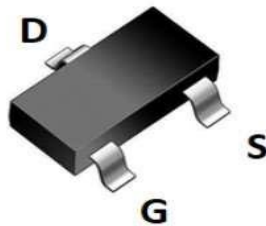
This Power MOSFET is produced using Maple semi's advanced planar stripeTRENCH technology. This advanced technology has been especially tailored to minimize conduction loss, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

### Application

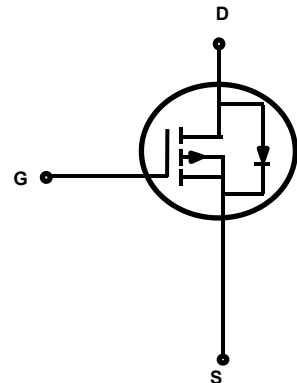
- Battery Protection
- Load Switch
- Power Management

### Features

- P-Channel: -30V -4.1A  
 $R_{DS(on)Typ} = 36m\Omega @ V_{GS} = -10V$   
 $R_{DS(on)Typ} = 52m\Omega @ V_{GS} = -4.5V$
- Very Low On-resistance RDS(ON)
- LowCrss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



SOT-23



### Absolute Maximum Ratings T<sub>C</sub> = 25°C unless otherwise noted

Symbol	Parameter	SLV3407T	Units
V <sub>DSS</sub>	Drain-Source Voltage	-30	V
I <sub>D</sub>	Drain Current - Continuous (T <sub>C</sub> = 25°C)	-4.1	A
	Drain Current - Continuous (T <sub>C</sub> = 70°C)	-3.2	A
I <sub>DM</sub>	Drain Current - Pulsed (Note 1)	-15	A
V <sub>GSS</sub>	Gate-Source Voltage	±20	V
P <sub>D</sub>	Power Dissipation (T <sub>A</sub> = 25°C)	1.2	W
	Power Dissipation (T <sub>A</sub> = 70°C)	0.8	
R <sub>θJA</sub>	Thermal Resistance, Junction to Case	105	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C
T <sub>L</sub>	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

\* Drain current limited by maximum junction temperature.

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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**Off Characteristics**

$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-30	--	--	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$	--	--	-1.0	$\mu\text{A}$
$I_{GSSF}$	Gate-Body Leakage Current, Forward	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA
$I_{GSSR}$	Gate-Body Leakage Current, Reverse	$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA

**On Characteristics**

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1	-1.5	-2.4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = -10\text{ V}, I_D = -4.1\text{ A}$	--	36	49	m $\Omega$
		$V_{GS} = -4.5\text{ V}, I_D = -3.5\text{ A}$	--	52	65	m $\Omega$

**Dynamic Characteristics**

$C_{iss}$	Input Capacitance	$V_{DS} = -15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	572	-	pF
$C_{oss}$	Output Capacitance		--	82	-	pF
$C_{rss}$	Reverse Transfer Capacitance		--	70	-	pF

**Switching Characteristics**

$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V},$ $R_G = 2.5\ \Omega, R_L = 15\ \Omega$	--	3.8	--	ns
$t_r$	Turn-On Rise Time		--	17.6	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	17.8	--	ns
$t_f$	Turn-Off Fall Time		--	21.8	--	ns
$Q_g$	Total Gate Charge	$V_{DS} = -15\text{ V}, I_D = -4.1\text{ A},$ $V_{GS} = -10\text{ V}$	--	11.65	--	nC
$Q_{gs}$	Gate-Source Charge		--	2.32	--	nC
$Q_{gd}$	Gate-Drain Charge		--	2.08	--	nC
$Q_{rr}$	Reverse Recovery Charge	$I_F = -10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		0.643		nC
$t_{rr}$	Reverse Recovery Time	$I_F = -10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		15.7		ns

**Drain-Source Diode Characteristics and Maximum Ratings**

$I_S$	Maximum Continuous Drain-Source Diode Forward Current	--	--	-4.1	A
$I_{SM}$	Maximum Pulsed Drain-Source Diode Forward Current	--	--	-16	A
$V_{SD}$	Drain to Source Diode Forward Voltage, $V_{GS} = 0\text{ V}, I_{SD} = -4.1\text{ A}, T_J = 25^\circ\text{C}$	--	--	-1.2	V

**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 0.5\%$

### P- Channel Typical Characteristics

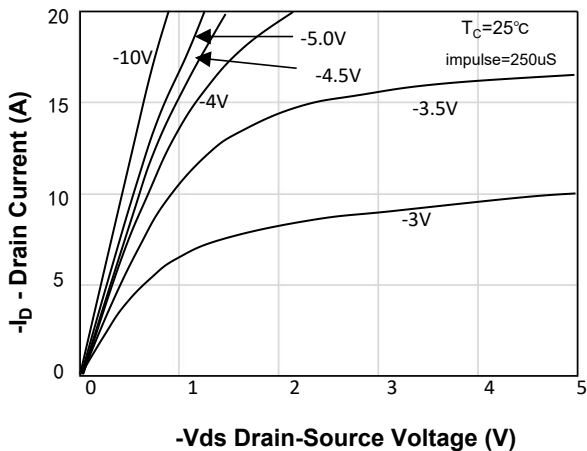


Figure 1. On-Region Characteristics

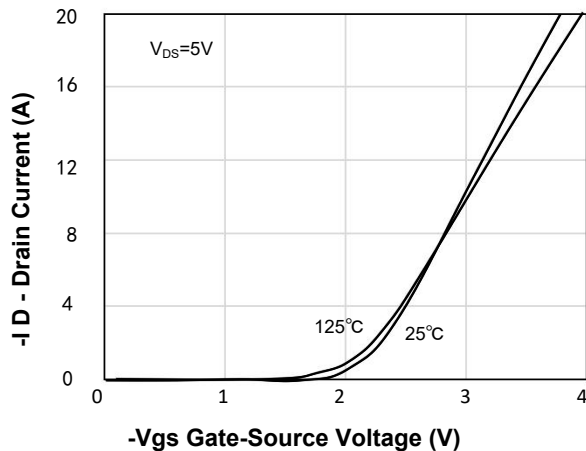


Figure 2. Transfer Characteristics

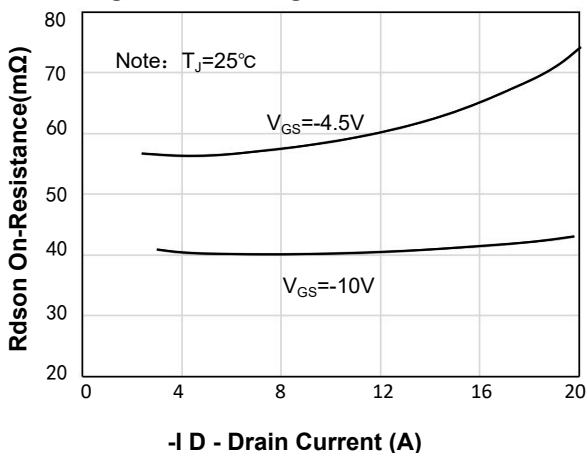


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

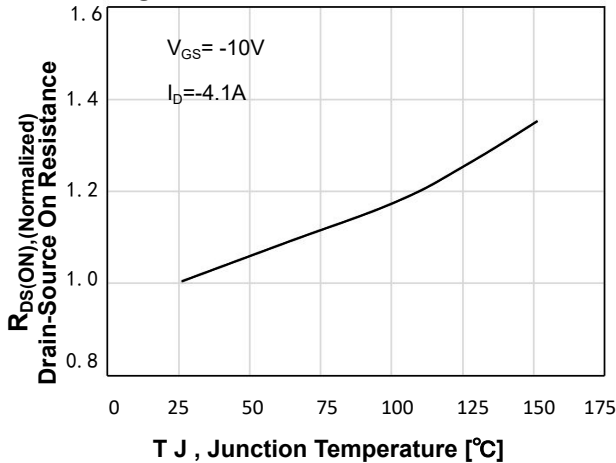


Figure 4. On-Resistance Variation vs Temperature

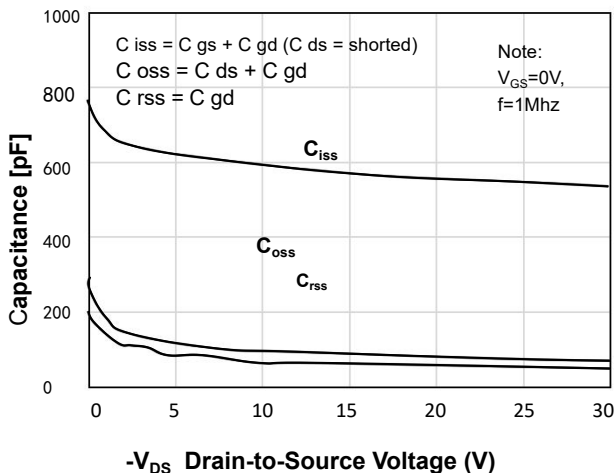


Figure 5. Capacitance Characteristics

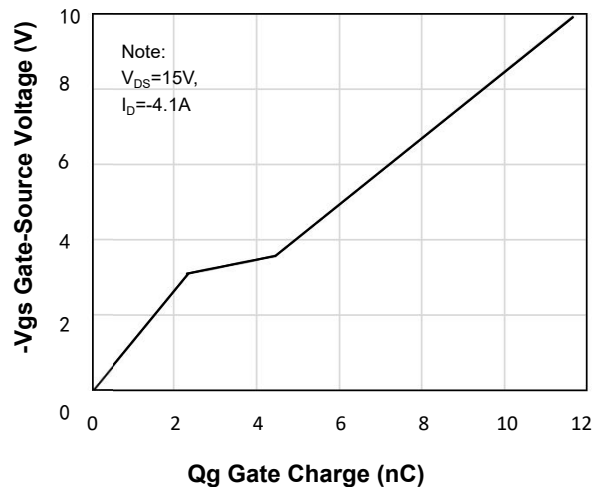


Figure 6. Gate Charge Characteristics

**P- Channel Typical Characteristics** (Continued)

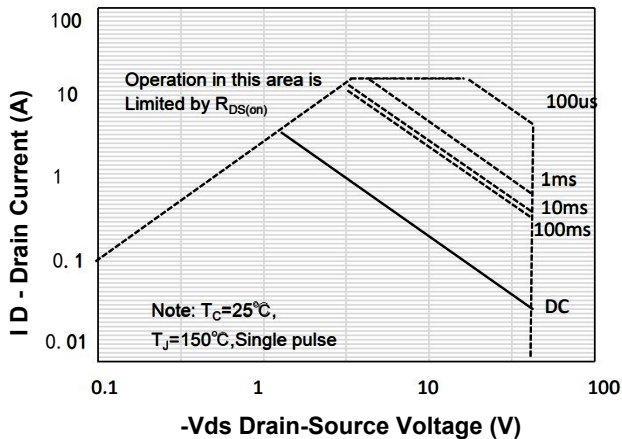


Figure 7. Maximum Safe Operating Area

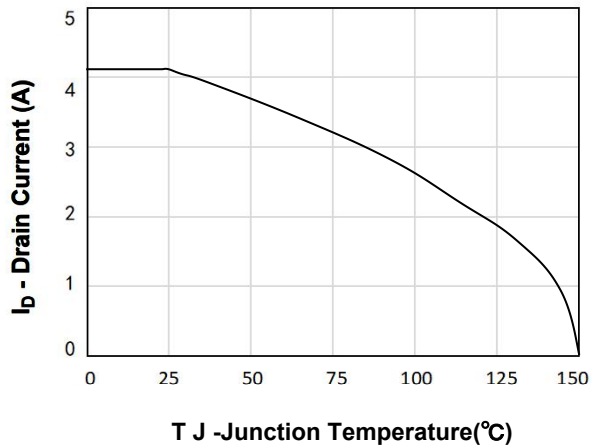


Figure 8. Maximum PContinuous Drain Current vs Case Temperature

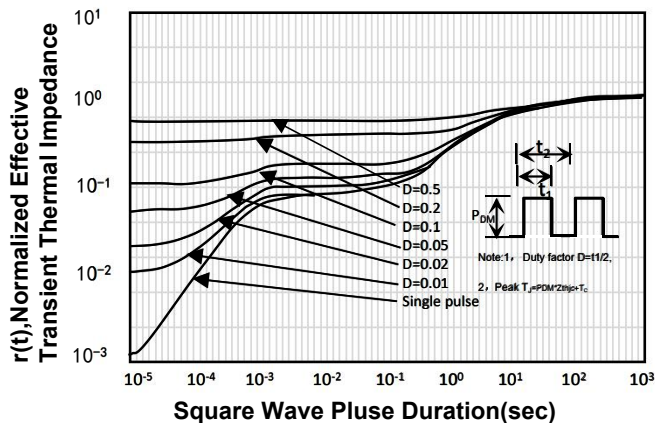
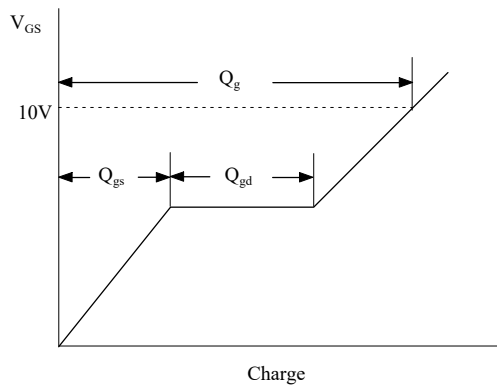
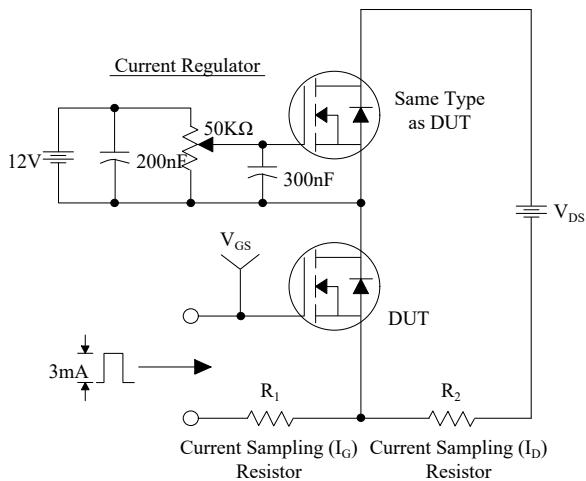
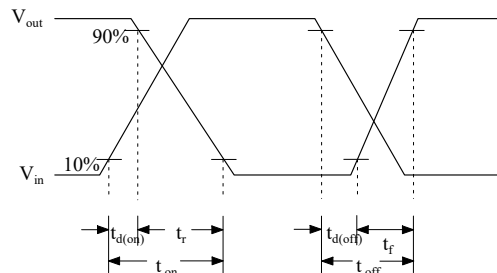
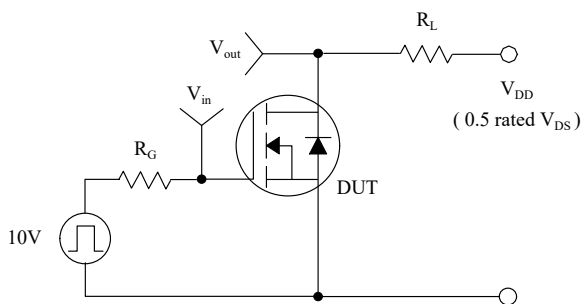


Figure 9. Transient Thermal Response Curve

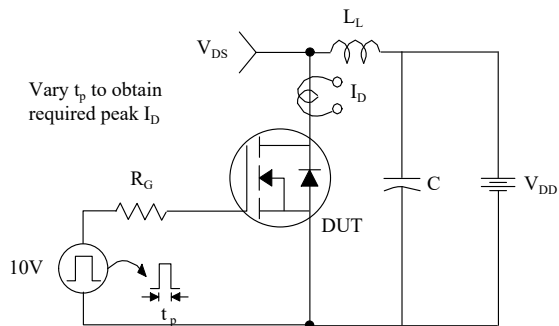
### Gate Charge Test Circuit & Waveform



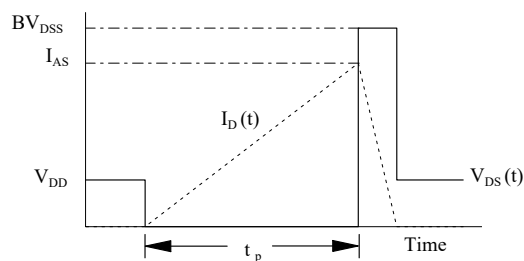
### Resistive Switching Test Circuit & Waveforms



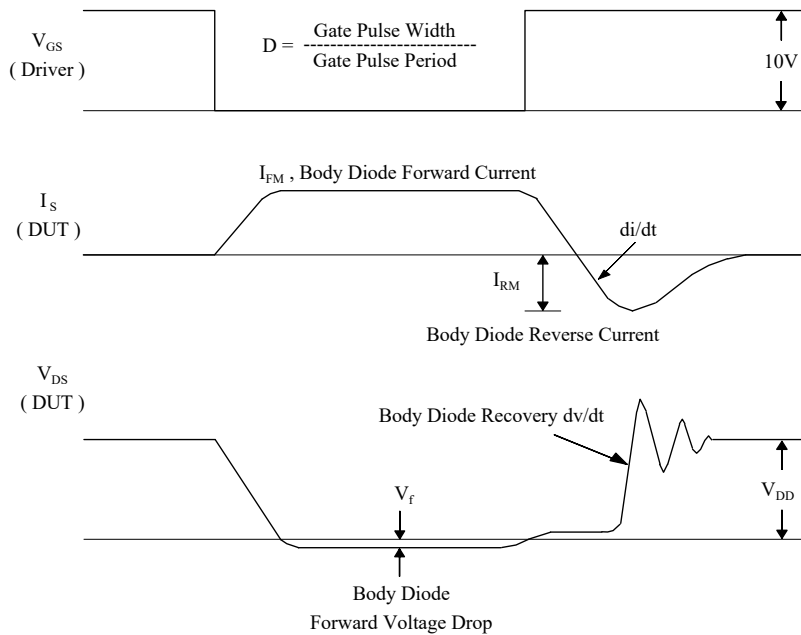
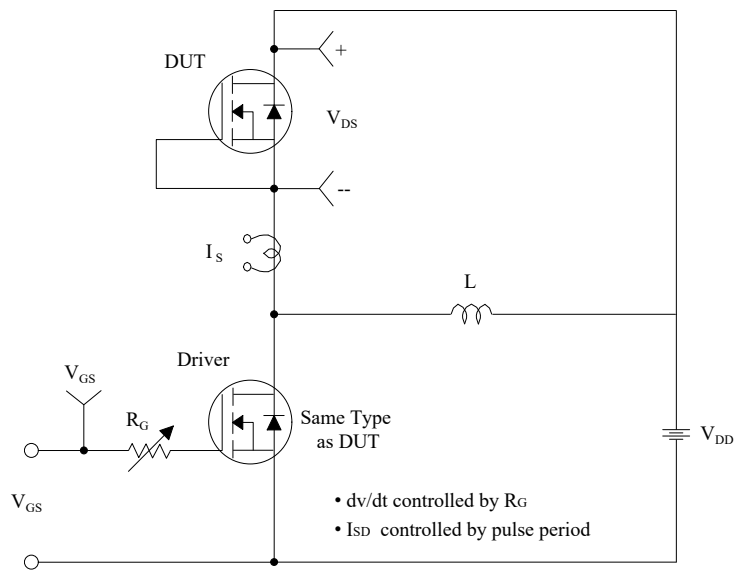
### Unclamped Inductive Switching Test Circuit & Waveforms



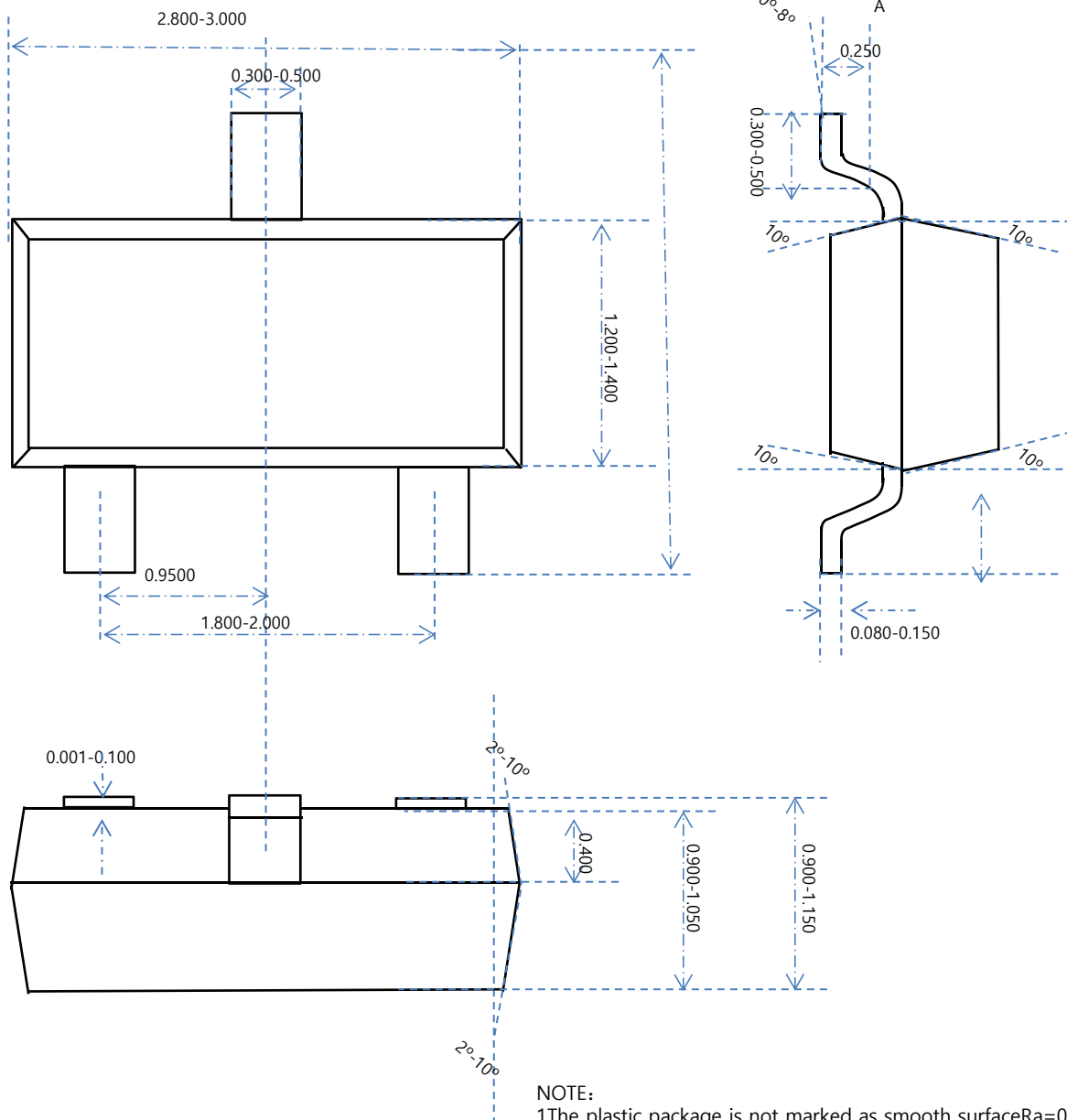
$$E_{AS} = \frac{1}{2} L_L I_{AS}^2$$



## Peak Diode Recovery dv/dt Test Circuit & Waveforms



# SOT-23 OUTLINE



NOTE:  
 1.The plastic package is not marked as smooth surfaceRa=0.1;  
 Subglossy surfaceRa=0.8  
 2.Undeclared tolerance  $\pm 0.25$ , Unmarked filletRmax=0.25

NAME	SOT-23 OUTLINE	UNIT	mm	DESIGNED	Shawn	THIRD ANGLE SYSTEM
DWGNO		PAGE	1 OF 1	CHECKED		
VERSION	Ver1.0	ISSUE DATE		APPROVED		

单击下面可查看定价，库存，交付和生命周期等信息

[>>Maplesemi\(美浦森半导体\)](#)