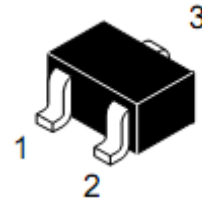
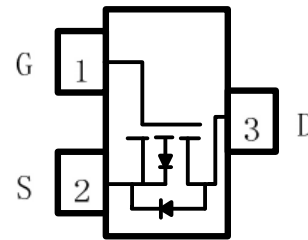


**WPM1483**
**Single P-Channel, -12V, -3.5A, Power MOSFET**
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

$V_{DS}$ (V)	Typical $R_{ds(on)}$ ( )
-12	0.031 @ $V_{GS} = -4.5V$
	0.040 @ $V_{GS} = -2.5V$
	0.056 @ $V_{GS} = -1.8V$


**SOT-23**
**Descriptions**

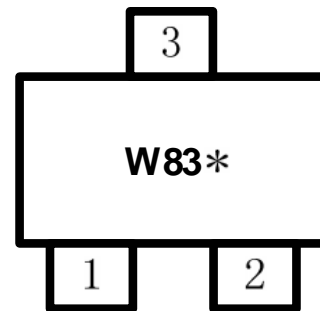
The WPM1483 is P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WPM1483 is Pb-free and Halogen-free.


**Pin configuration (Top view)**
**Features**

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23

**Applications**

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging


**W=Willsemi**
**83= Device Code**
**\*= Month (A-Z)**
**Marking**
**Order information**

Device	Package	Shipping
WPM1483 -3/TR	SOT-23	3000/Reel&Tape

**Absolute Maximum ratings**

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		$V_{DS}$	-12		V
Gate-Source Voltage		$V_{GS}$	$\pm 8$		
Continuous Drain Current <sup>a d</sup>	$T_A=25^\circ\text{C}$	$I_D$	-3.5	-3.2	A
	$T_A=70^\circ\text{C}$		-2.9	-2.5	
Maximum Power Dissipation <sup>a d</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.74	0.57	W
	$T_A=70^\circ\text{C}$		0.47	0.37	
Continuous Drain Current <sup>b</sup>	$T_A=25^\circ\text{C}$	$I_D$	-3.4	-2.9	A
	$T_A=70^\circ\text{C}$		-2.7	-2.3	
Maximum Power Dissipation <sup>b</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.67	0.49	W
	$T_A=70^\circ\text{C}$		0.43	0.31	
Pulsed Drain Current <sup>c</sup>		$I_{DM}$	-10		A
Operating Junction Temperature		$T_J$	150		$^\circ\text{C}$
Lead Temperature		$T_L$	260		$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55 to 150		$^\circ\text{C}$

**Thermal resistance ratings**

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	t 10 s	$R_{JA}$	140	168	$^\circ\text{C}/\text{W}$
	Steady State		180	216	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	t 10 s	$R_{JA}$	155	186	
	Steady State		212	254	
Junction-to-Case Thermal Resistance		$R_{JC}$	63	78	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

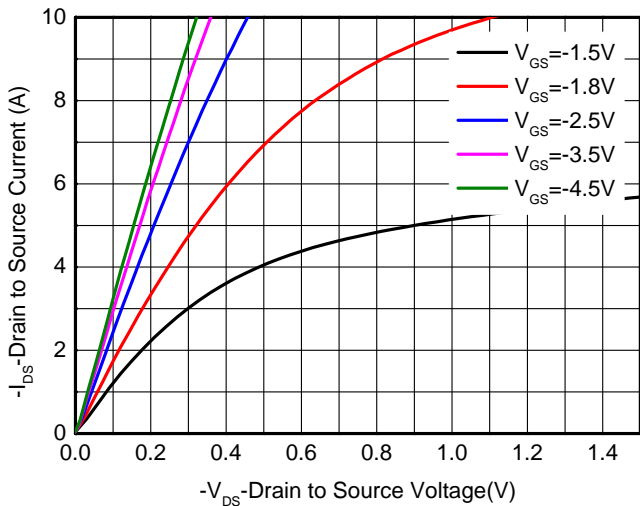
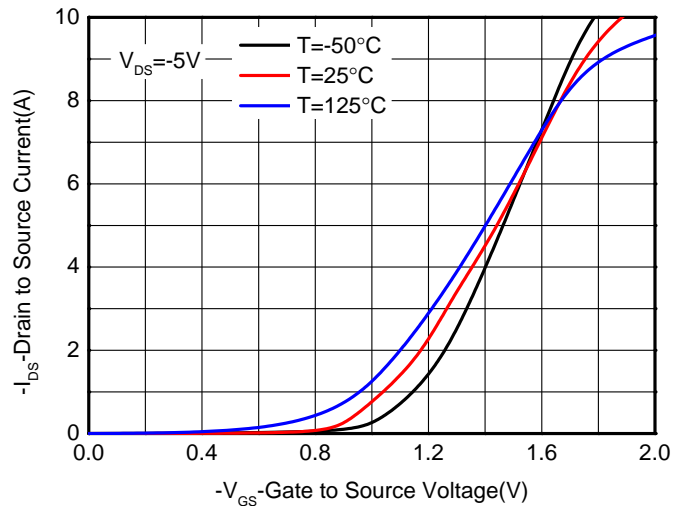
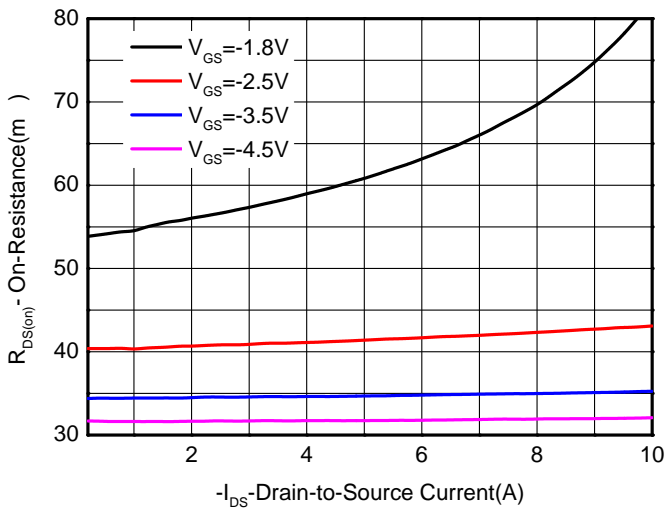
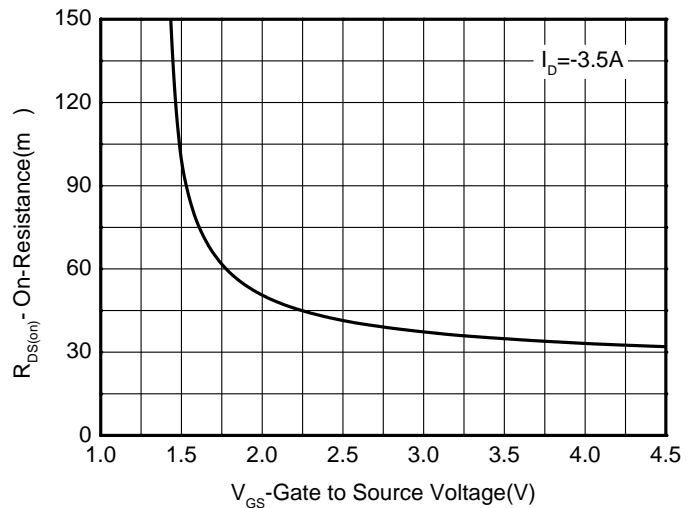
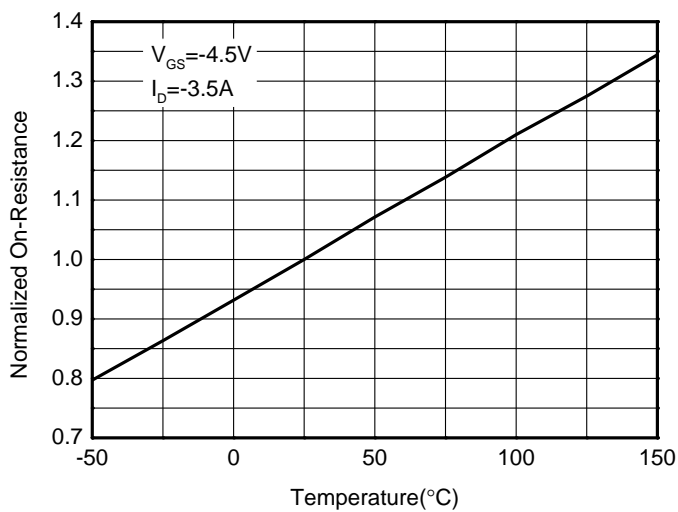
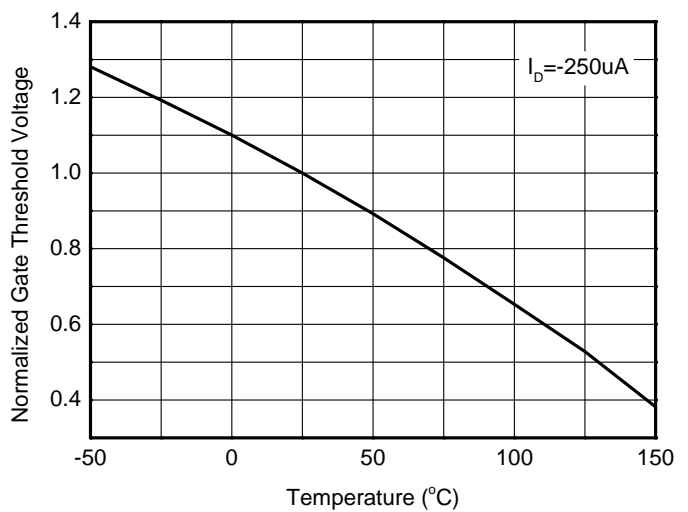
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

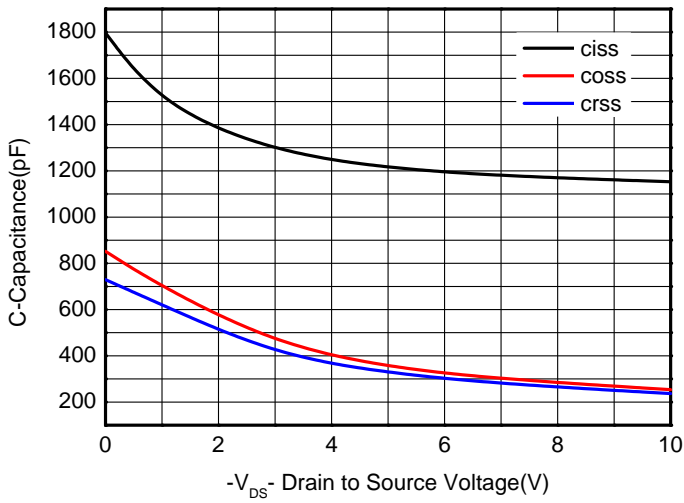
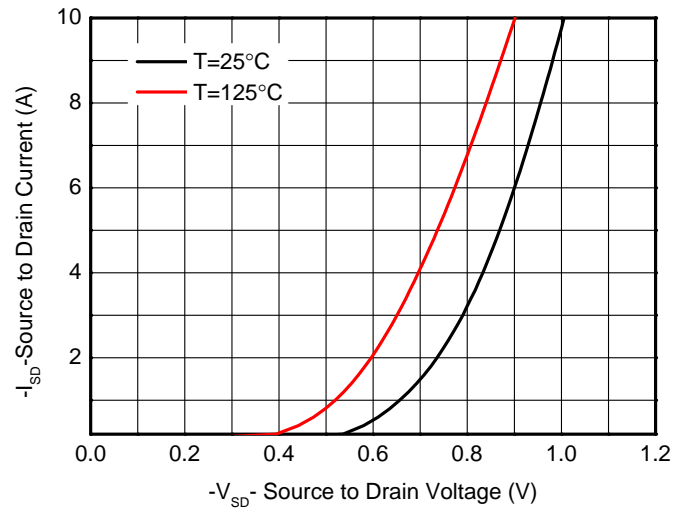
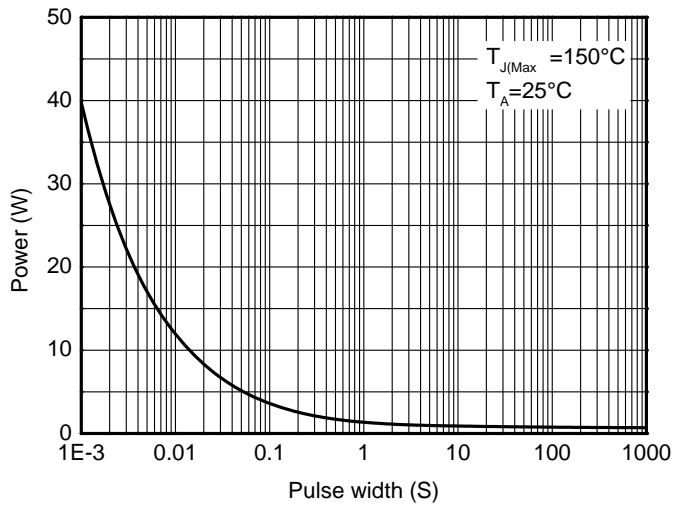
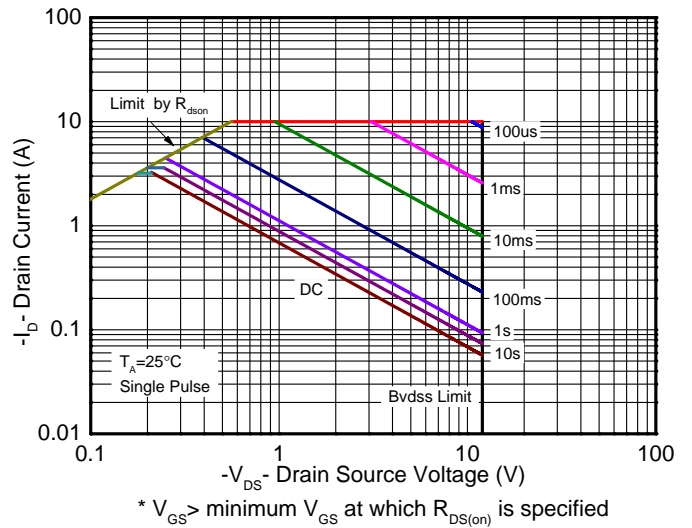
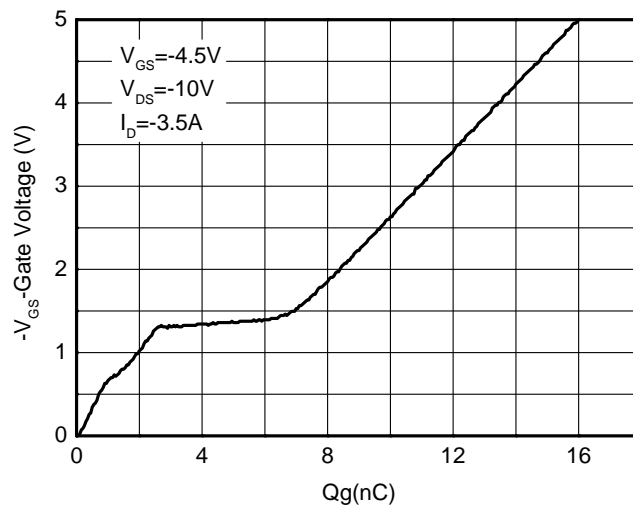
c Pulse width<380 $\mu\text{s}$ , Duty Cycle<2%

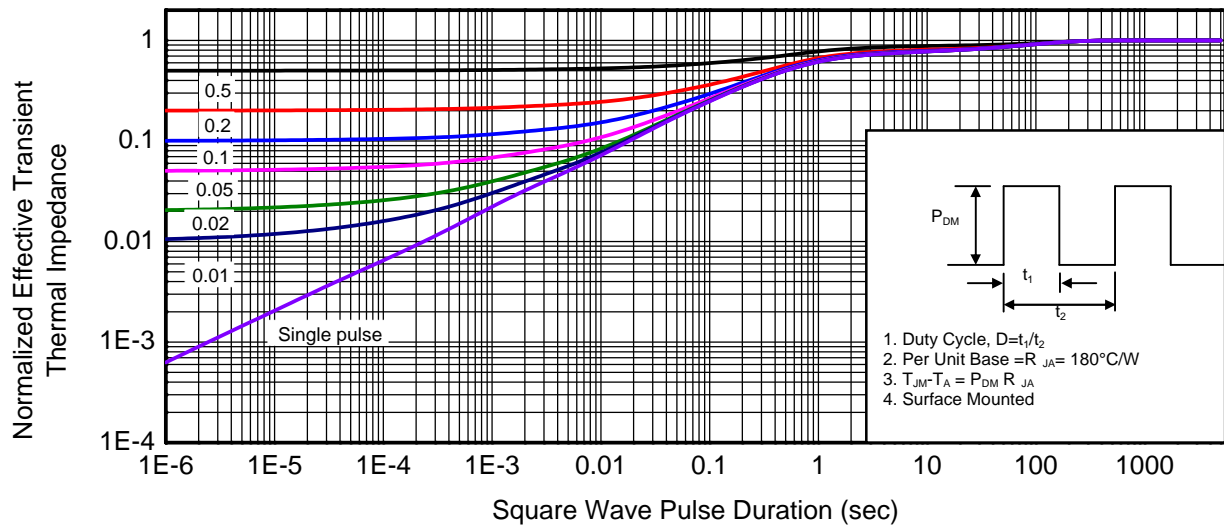
d Maximum junction temperature  $T_J=150^\circ\text{C}$ .

**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-12			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			$\pm 1$	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	-0.45	-0.55	-0.85	V
Drain-to-source On-resistance <sup>b, c</sup>	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -3.5\text{ A}$		31	37	m
		$V_{GS} = -2.5\text{ V}, I_D = -3.0\text{ A}$		40	55	
		$V_{GS} = -1.8\text{ V}, I_D = -2.0\text{ A}$		56	88	
Forward Trans conductance	$g_{fs}$	$V_{DS} = -5.0\text{ V}, I_D = -2.0\text{ A}$		8.5		S
<b>CAPACITANCES, CHARGES</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz},$ $V_{DS} = -10\text{ V}$		1152		pF
Output Capacitance	$C_{OSS}$			253		
Reverse Transfer Capacitance	$C_{RSS}$			236		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5\text{ V},$ $V_{DD} = -10\text{ V},$ $I_D = -3.5\text{ A}$		14.6		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.35		
Gate-to-Source Charge	$Q_{GS}$			2.3		
Gate-to-Drain Charge	$Q_{GD}$			5.7		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5\text{ V},$ $V_{DD} = -10\text{ V},$ $R_L = 3\ \Omega,$ $R_G = 6\ \Omega$		26		ns
Rise Time	$t_r$			23		
Turn-Off Delay Time	$t_d(OFF)$			68		
Fall Time	$t_f$			45		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = -1.0\text{ A}$		-0.8	-1.5	V

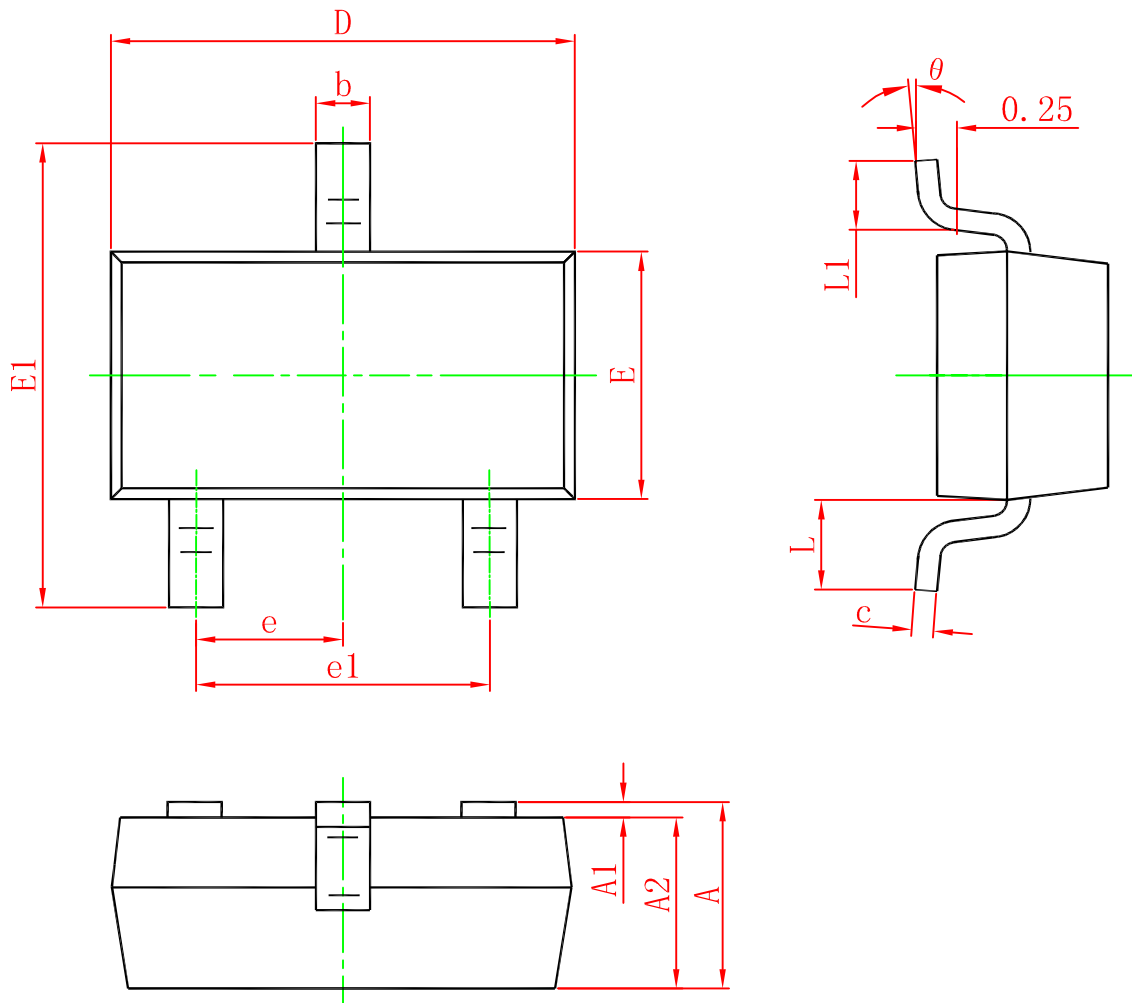
**Typical Characteristics (Ta=25°C, unless otherwise noted)**

**Output characteristics**

**Transfer characteristics**

**On-Resistance vs. Drain current**

**On-Resistance vs. Gate-to-Source voltage**

**On-Resistance vs. Junction temperature**

**Threshold voltage vs. Temperature**


**Capacitance**

**Body diode forward voltage**

**Single pulse power**

**Safe operating power**

**Gate charge Characteristics**



1. Duty Cycle,  $D=t_1/t_2$
2. Per Unit Base  $=R_{JA}=180^\circ\text{C/W}$
3.  $T_{JM}-T_A = P_{DM} R_{JA}$
4. Surface Mounted

**Transient thermal response (Junction-to-Ambient)**

**Package outline dimensions**
**SOT-23**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°