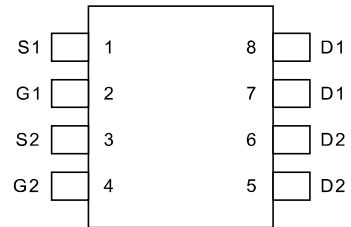


## Dual P-Channel Enhancement Mode MOSFET

### Description

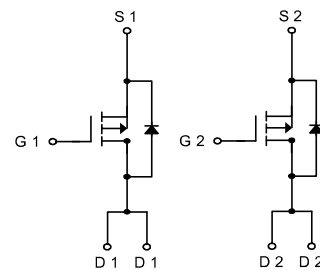
The SM4953 uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. The two MOSFETs make a compact and efficient switch and synchronous rectifier combination for use in buck converters.



SOIC-8




### General Features

- -30V/-4.9A,  $R_{DS(ON)} = 53m\Omega$  (typ.) @  $V_{GS} = -10V$   
 $R_{DS(ON)} = 80m\Omega$  (typ.) @  $V_{GS} = -4.5V$
- Super High Density Cell Design
- Reliable and Rugged
- SO-8 Package



P-Channel MOSFET

### ◆ Ordering Information

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
SM4953PRL	SM4953SRG	SOP-8	S1	G1	S2	G2	D1	D1	D2	D2	Tape Reel
<p style="text-align: center;"><b>SM4953 X X X</b></p> <p>(1) Package Type </p> <p>(2) Packing Type </p> <p>(3) Lead Free </p>			<p>(1) P: SOP-8</p> <p>(2) R: Tape Reel</p> <p>(3) G: Halogen Free; L: Lead Free</p>								



## ◆ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 25$	
$I_D^*$	Maximum Drain Current – Continuous $T_A = 25^\circ\text{C}$	-4.9	A
$I_{DM}$	Maximum Drain Current – Pulsed	-30	

a:Fused current that based on wire numbers and diameter

b:Repetitive Rating: Pulse width limited by the maximum junction temperature

c:1-in<sup>2</sup> 2oz Cu PCB board

## ◆ Electrical Characteristics ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

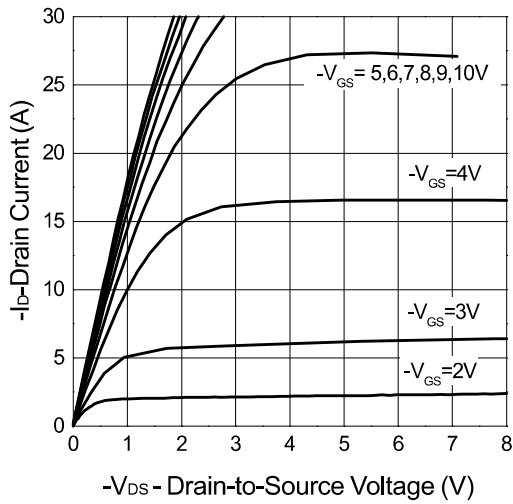
Symbol	Parameter	Test Condition	SM4953			Unit
			Min.	Typ <sup>a</sup> .	Max.	
<b>Static</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$			-1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1	-1.5	-2	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$			$\pm 100$	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance <sup>b</sup>	$V_{GS}=-10V, I_{DS}=-4.9A$		53	60	m $\Omega$
		$V_{GS}=-4.5V, I_{DS}=-3.6A$		80	95	
$V_{SD}$	Diode Forward Voltage <sup>b</sup>	$I_{SD}=-1.7A, V_{GS}=0V$		-0.7	-1.3	V
<b>Dynamic<sup>a</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS}=-15V, I_{GS}=-10V$		22.3	29	nC
$Q_{gs}$	Gate-Source Charge	$I_D=-4.6A$		4.65		
$Q_{gd}$	Gate-Drain Charge			2		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-15V, I_D=-2A,$ $V_{GEN}=-10V, R_G=6\Omega$ $R_L=7.5\Omega$		10	18	ns
$T_r$	Turn-on Rise Time			15	20	
$t_{d(OFF)}$	Turn-off Delay Time			22	38	
$T_f$	Turn-off Fall Time			15	25	
$C_{iss}$	Input Capacitance	$V_{GS}=0V$		1260		pF
$C_{oss}$	Output Capacitance	$V_{DS}=-25V$		340		
$C_{rss}$	Reverse Transfer Capacitance	Frequency=1.0MHz		220		

Note: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2\%$

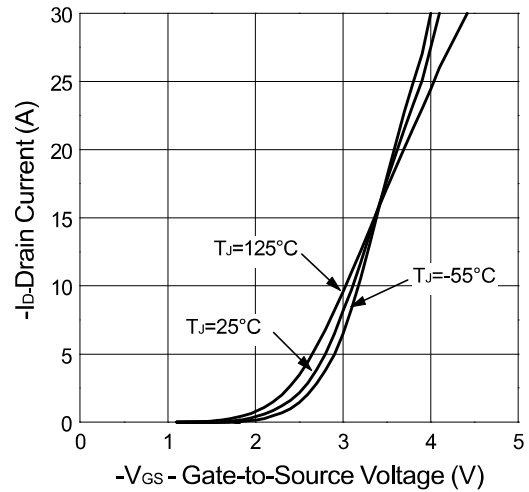
d: Guaranteed by design: not subject to production testing

## Typical Characteristics

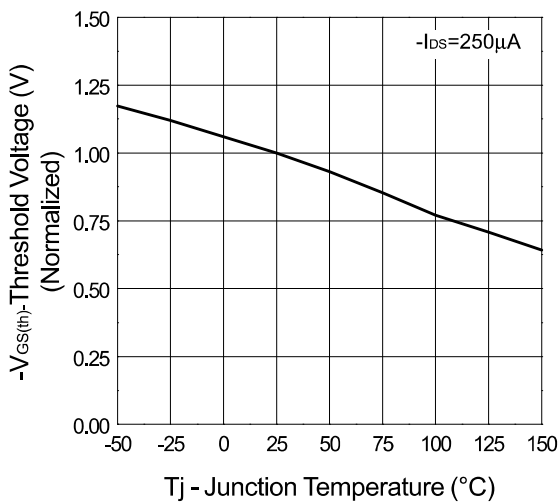
Output Characteristics



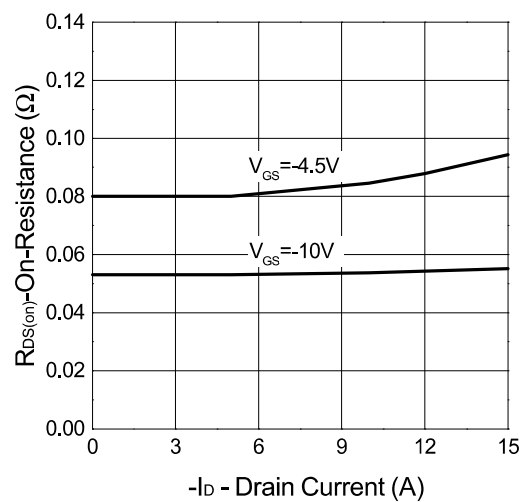
Transfer Characteristics



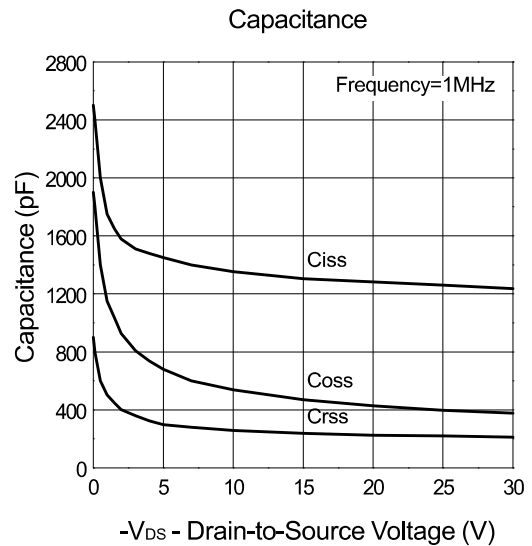
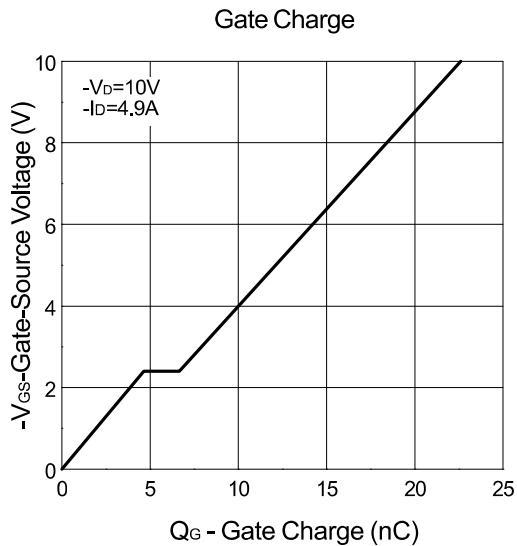
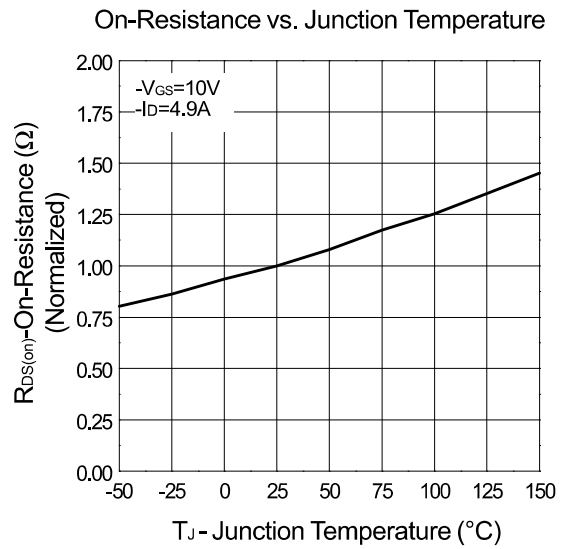
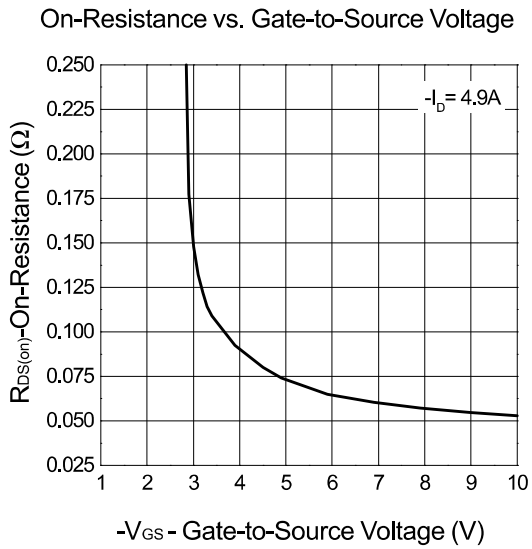
Threshold Voltage vs. Junction Temperature



On-Resistance vs. Drain Current

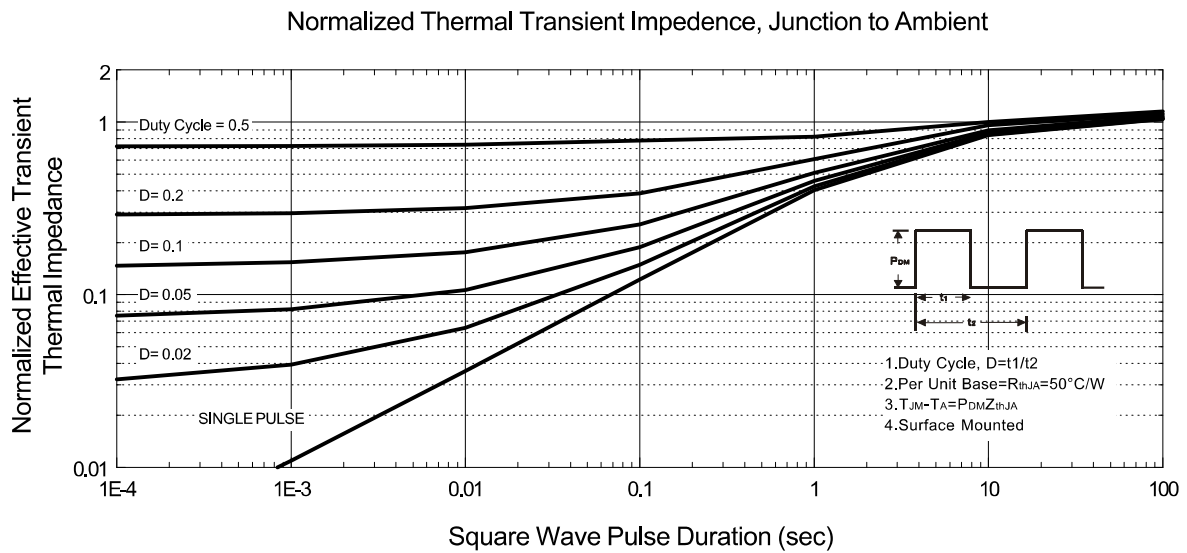
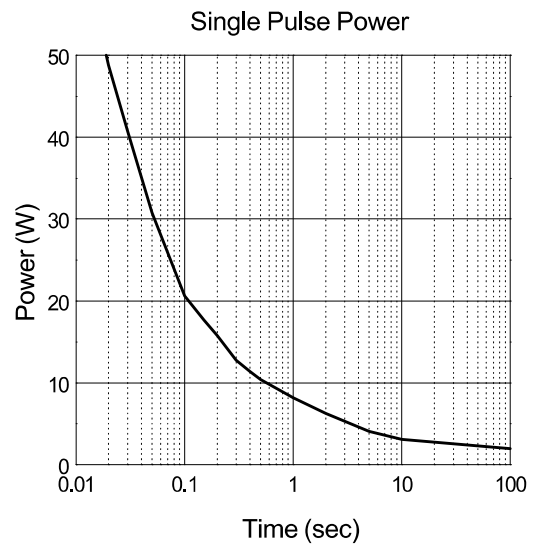
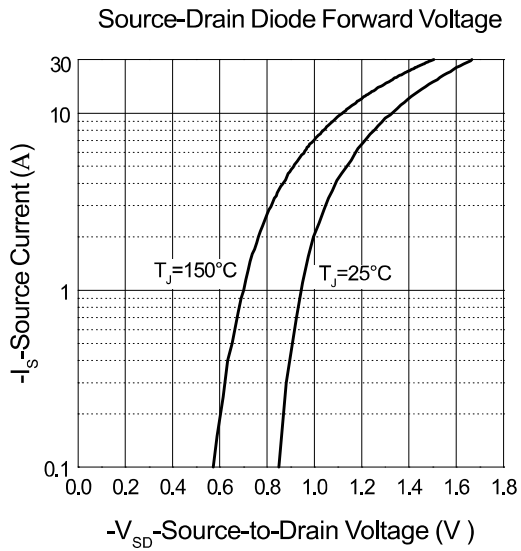


## Typical Characteristics (Cont.)



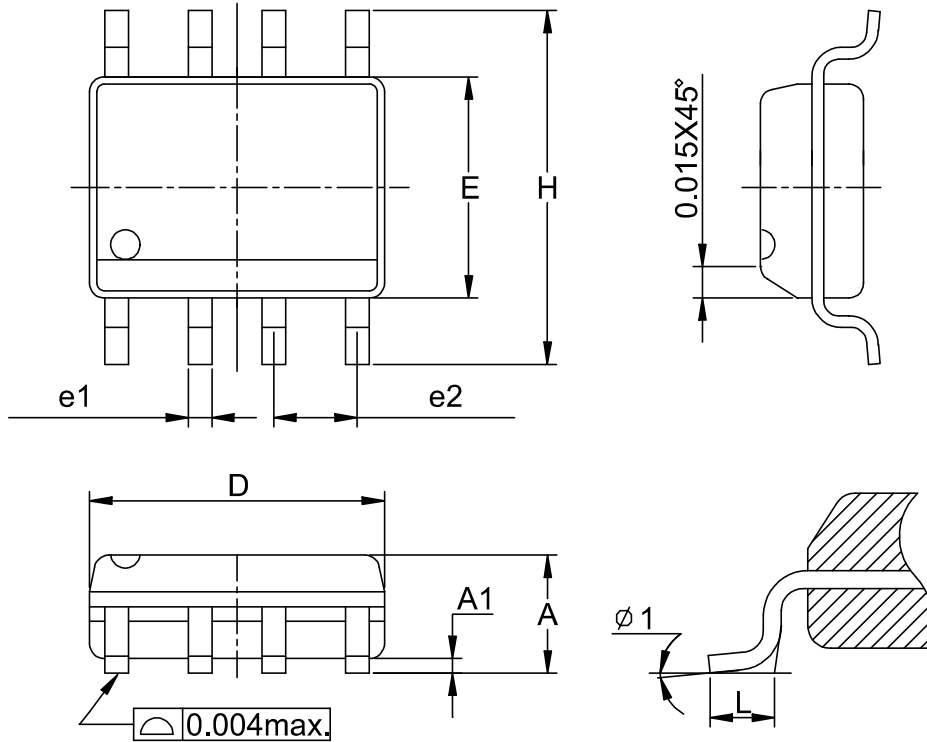


## Typical Characteristics (Cont.)



## Packaging Information

SOP-8 pin ( Reference JEDEC Registration MS-012)



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	