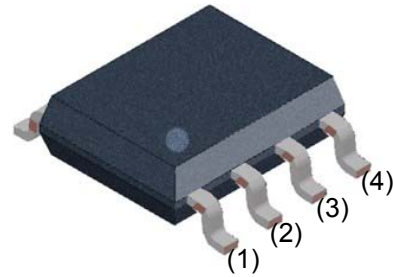
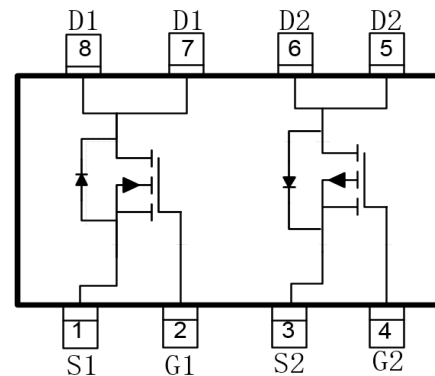
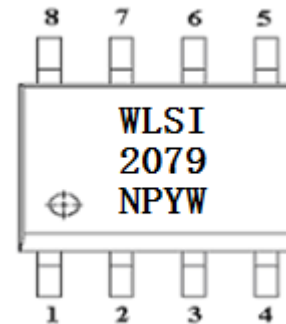


**WCM2079**
**N- and P-Channel Complementary, 20V, MOSFET**
<http://www.sh-willsemi.com>

V <sub>DS</sub> (V)	Typical R <sub>DS(on)</sub> (Ω)
N-Channel 20	0.020@V <sub>GS</sub> =10V
	0.023@V <sub>GS</sub> =4.5V
P-Channel -20	0.028@V <sub>GS</sub> =-10V
	0.035@V <sub>GS</sub> =-4.5V


**SOP-8L**
**Descriptions**

The WCM2079 is the N-Channel and P-Channel enhancement MOS Field Effect Transistor as a single package for DC-DC converter or level shift applications, uses advanced trench technology and design to provide excellent R<sub>DS(ON)</sub> with low gate charge. Standard Product WCM2079 is Pb-free and Halogen-free.


**Pin configuration (Top View)**


2079 = Device Code  
 NP = Special Code  
 YW = Date Code

**Marking**
**Features**

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Package SOP-8L

**Applications**

- Driver: Relays, Solenoids, Lamps, Hammers
- Power supply converters circuit
- Load/Power Switching for portable device

**Order Information**

Device	Package	Shipping
WCM2079-8/TR	SOP-8L	4000/Tape&Reel

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

Symbol	Parameter	N-Channel		P-Channel		Unit	
		10 s	Steady State	10 s	Steady State		
$V_{DSS}$	Drain-to-Source Voltage	20		-20		V	
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$		$\pm 20$		V	
$I_D$	Continuous Drain Current <sup>a d</sup>	$T_A=25^\circ\text{C}$	6.5	5.1	-6.4	-5.0	A
		$T_A=70^\circ\text{C}$	5.2	4.1	-5.1	-4.0	
$P_D$	Power Dissipation <sup>a d</sup>	$T_A=25^\circ\text{C}$	1.9	1.2	1.8	1.1	W
		$T_A=70^\circ\text{C}$	1.2	0.8	1.1	0.7	
$I_D$	Continuous Drain Current <sup>b d</sup>	$T_A=25^\circ\text{C}$	6.0	4.9	-5.9	-4.8	A
		$T_A=70^\circ\text{C}$	4.8	3.9	-4.7	-3.8	
$P_D$	Power Dissipation <sup>b d</sup>	$T_A=25^\circ\text{C}$	1.6	1.1	1.5	1.0	W
		$T_A=70^\circ\text{C}$	1.1	0.7	1.0	0.6	
$I_{DM}$	Pulsed Drain Current <sup>c</sup>	26		-25		A	
$T_J$	Operation junction temperature	-55 to 150				$^\circ\text{C}$	
$T_L$	Lead Temperature	260				$^\circ\text{C}$	
$T_{stg}$	Storage temperature range	-55 to 150				$^\circ\text{C}$	

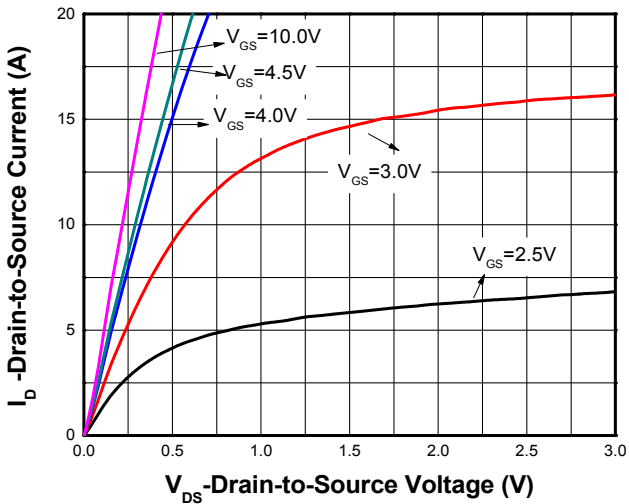
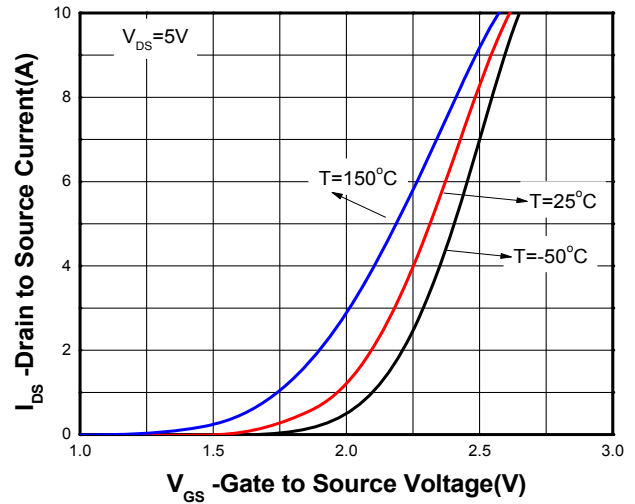
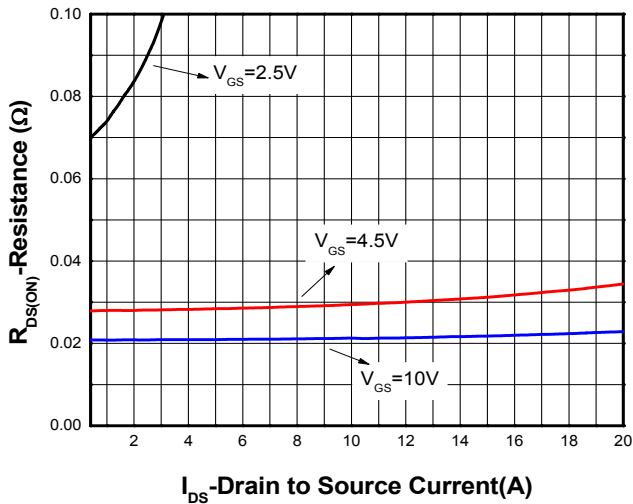
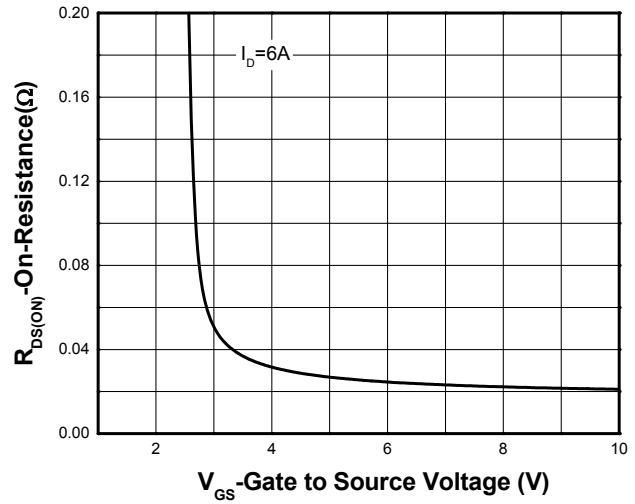
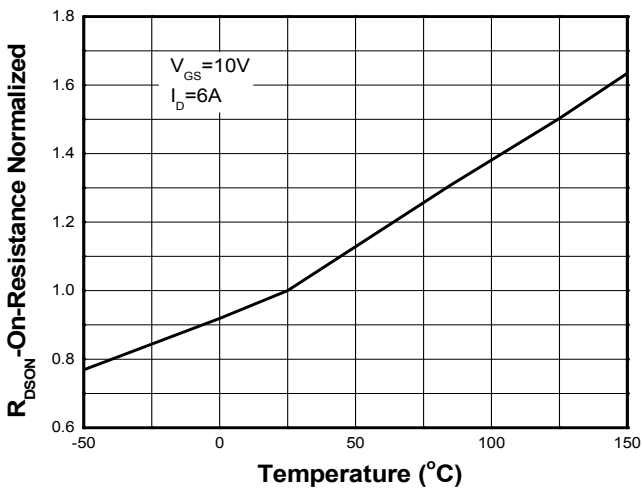
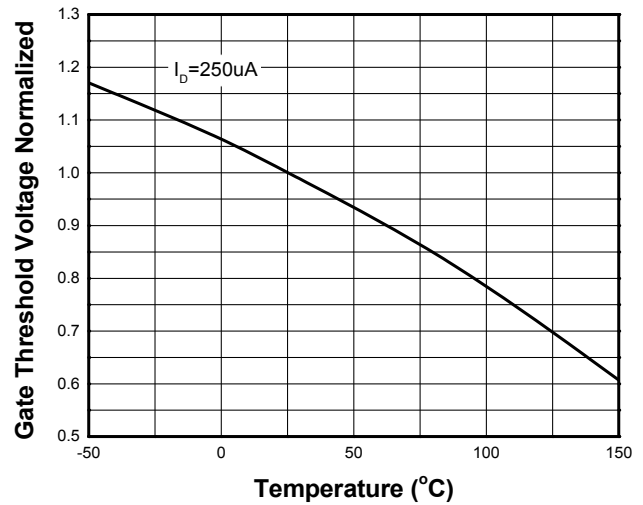
**Thermal Resistance Ratings ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

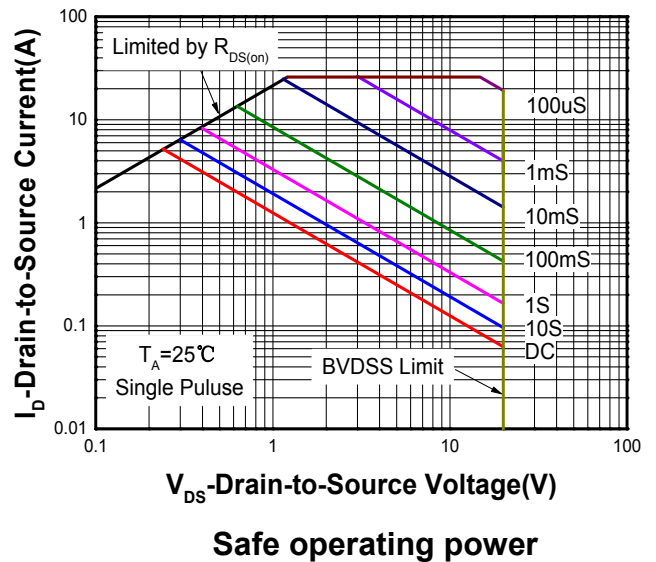
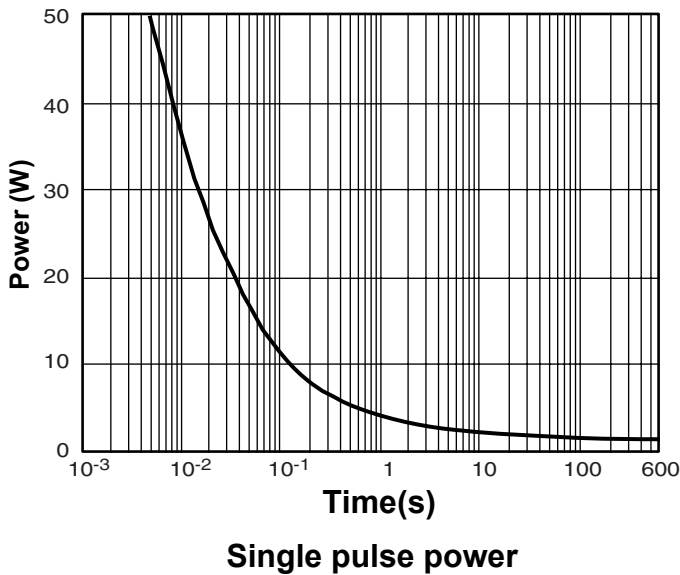
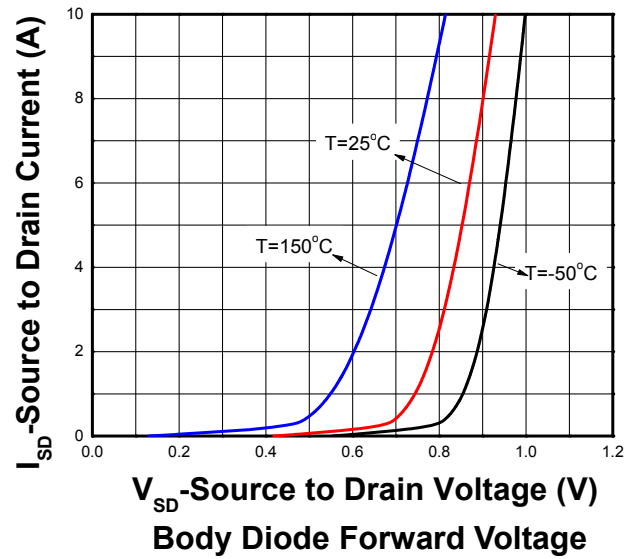
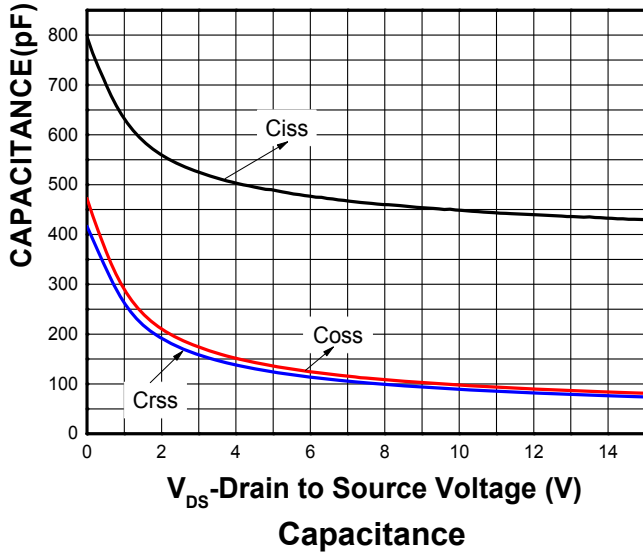
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10$ s	$R_{\theta JA}$	56	65	$^\circ\text{C}/\text{W}$
	Steady State		87	105	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10$ s	$R_{\theta JA}$	64	76	
	Steady State		96	115	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	32	40	

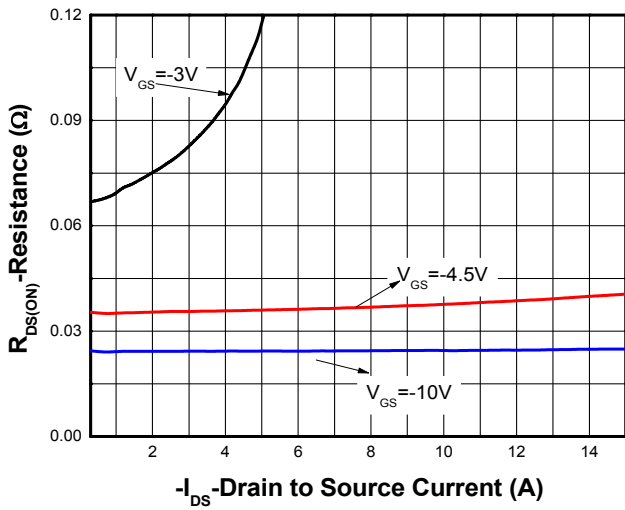
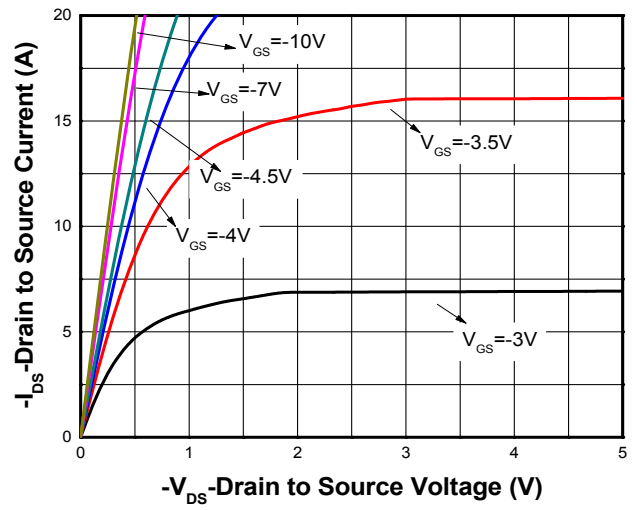
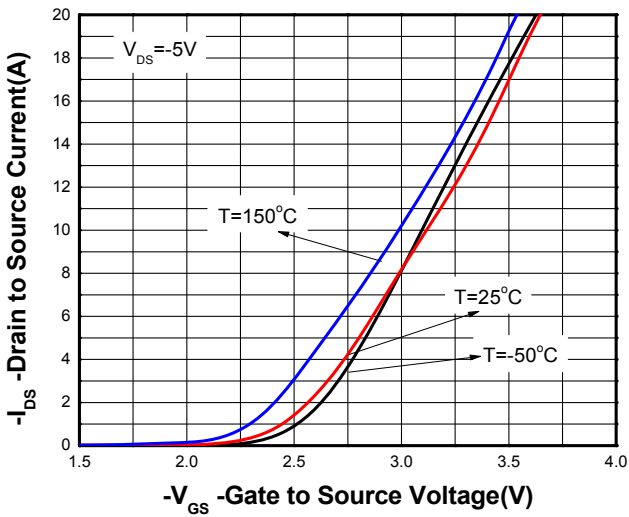
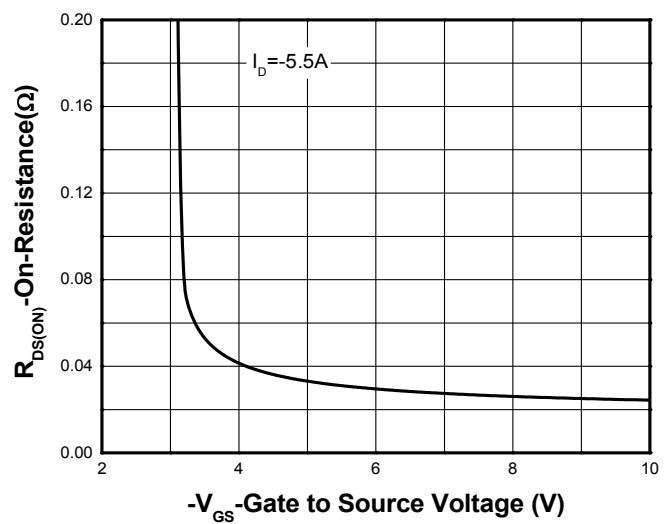
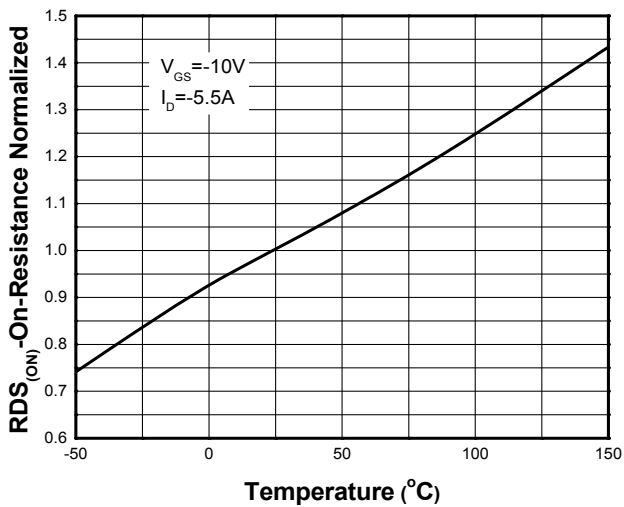
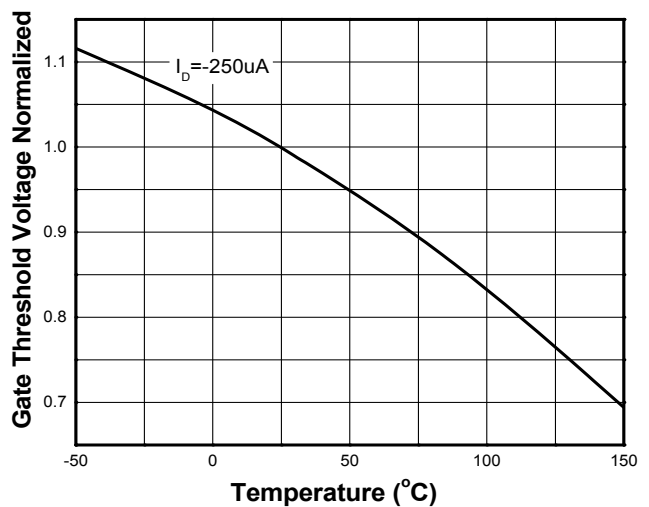
- a Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper
- b Surface mounted on FR4 board using minimum pad size, 1oz copper
- c Repetitive rating, pulse width limited by junction temperature,  $t_p=10\mu\text{s}$ , Duty Cycle=1%
- d Repetitive rating, pulse width limited by junction temperature  $T_J=150^\circ\text{C}$ .

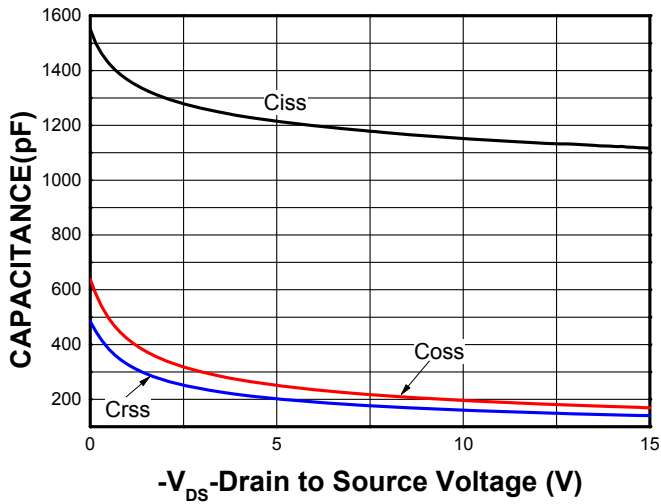
**Electronics Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
<b>Off Characteristics</b>							
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	N-Ch	20			V
		V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	P-Ch	-20			
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V	N-Ch			1	uA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V	P-Ch			-1	
I <sub>GSS</sub>	Gate –Source leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	N-Ch			±100	nA
			P-Ch			±100	
<b>ON Characteristics</b>							
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250uA	N-Ch	1.0	1.5	2.5	V
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250uA	P-Ch	-1.0	-1.5	-2.5	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =6A	N-Ch		20	31	mΩ
		V <sub>GS</sub> =-10V, I <sub>D</sub> =-5.5A	P-Ch		23	35	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.0A	N-Ch		28	41	
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5.0A	P-Ch		35	45	
<b>Dynamic Characteristics</b>							
C <sub>iss</sub>	Input Capacitance	Nmos: V <sub>DS</sub> =15V, V <sub>GS</sub> =0V,	N-Ch		429		pF
C <sub>oss</sub>	Output Capacitance	F=1MHz	P-Ch		1109		
			N-Ch		81		
C <sub>rss</sub>	Reverse Transfer Capacitance	Pmos: V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz	P-Ch		167		
			N-Ch		74		
			P-Ch		140		
td(on)	Turn-On Delay Time	Nmos: V <sub>DD</sub> =5V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.0A, R <sub>G</sub> =3Ω	N-Ch		12		ns
tr	Turn-On Rise Time		P-Ch		27		
			N-Ch		11		
td(off)	Turn-Off Delay Time		P-Ch		22		
			N-Ch		21		
tf	Turn-Off Fall Time		Pmos: V <sub>DD</sub> =-5V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A, R <sub>G</sub> =3Ω	P-Ch		41	
			N-Ch		10		
			P-Ch		24		
<b>BODY DIODE CHARACTERISTICS</b>							
V <sub>SD</sub>	Forward Voltage	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 1.0A	N-Ch		0.75	1.5	V
		V <sub>GS</sub> = 0 V, I <sub>S</sub> = -1.0A	P-Ch		-0.75	-1.5	

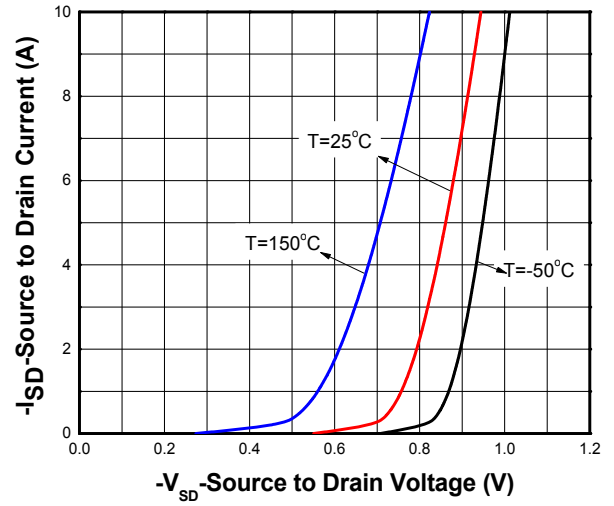
**Typical Characteristics (N-Channel Ta=25°C, unless otherwise noted)**

**Output characteristics**

**Transfer characteristics**

**On-Resistance vs. Drain current**

**On-Resistance vs. Gate-to-source**

**On-Resistance vs. Junction temperature**

**Threshold voltage vs. Temperature**



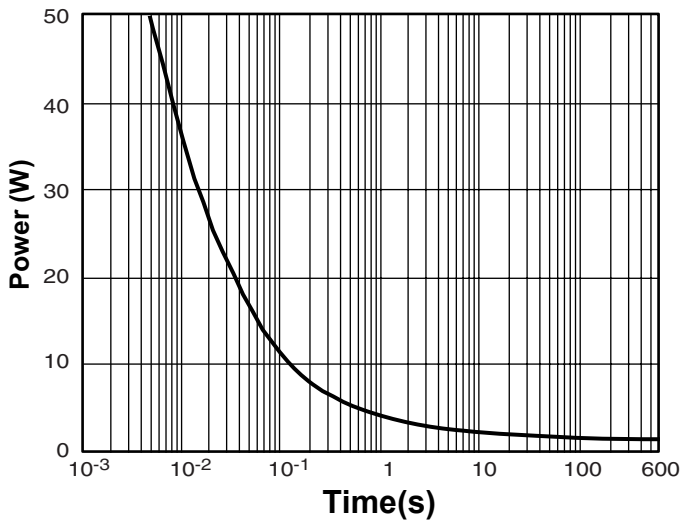
**Typical Characteristics (P-Channel Ta=25°C, unless otherwise noted)**

**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**



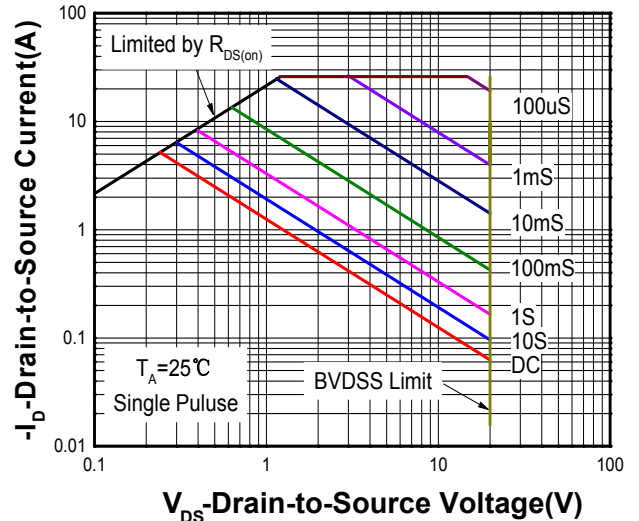
Capacitance



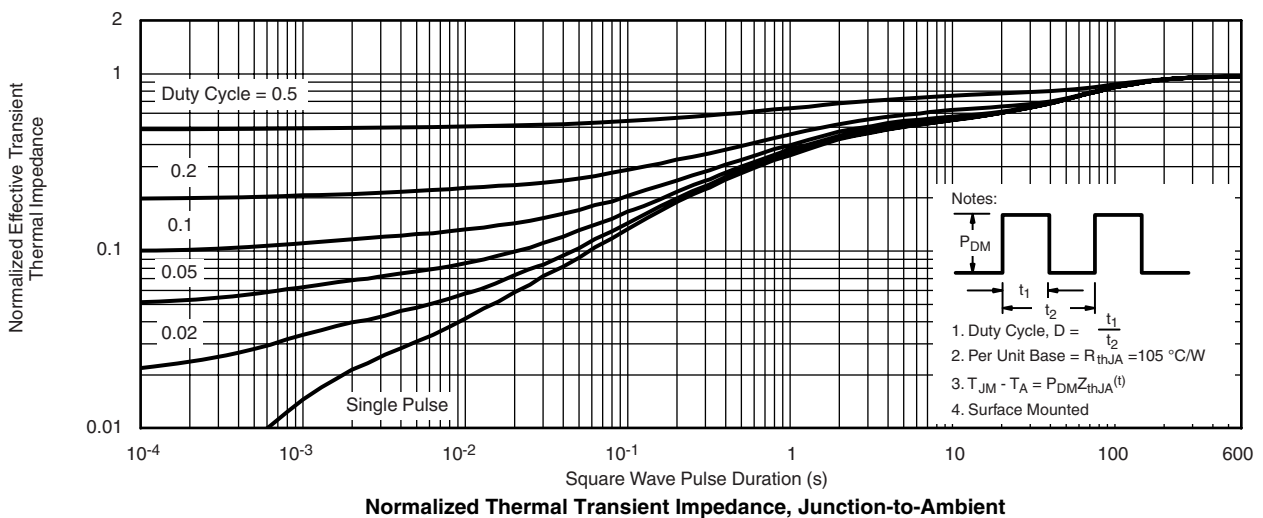
Body Diode Forward Voltage

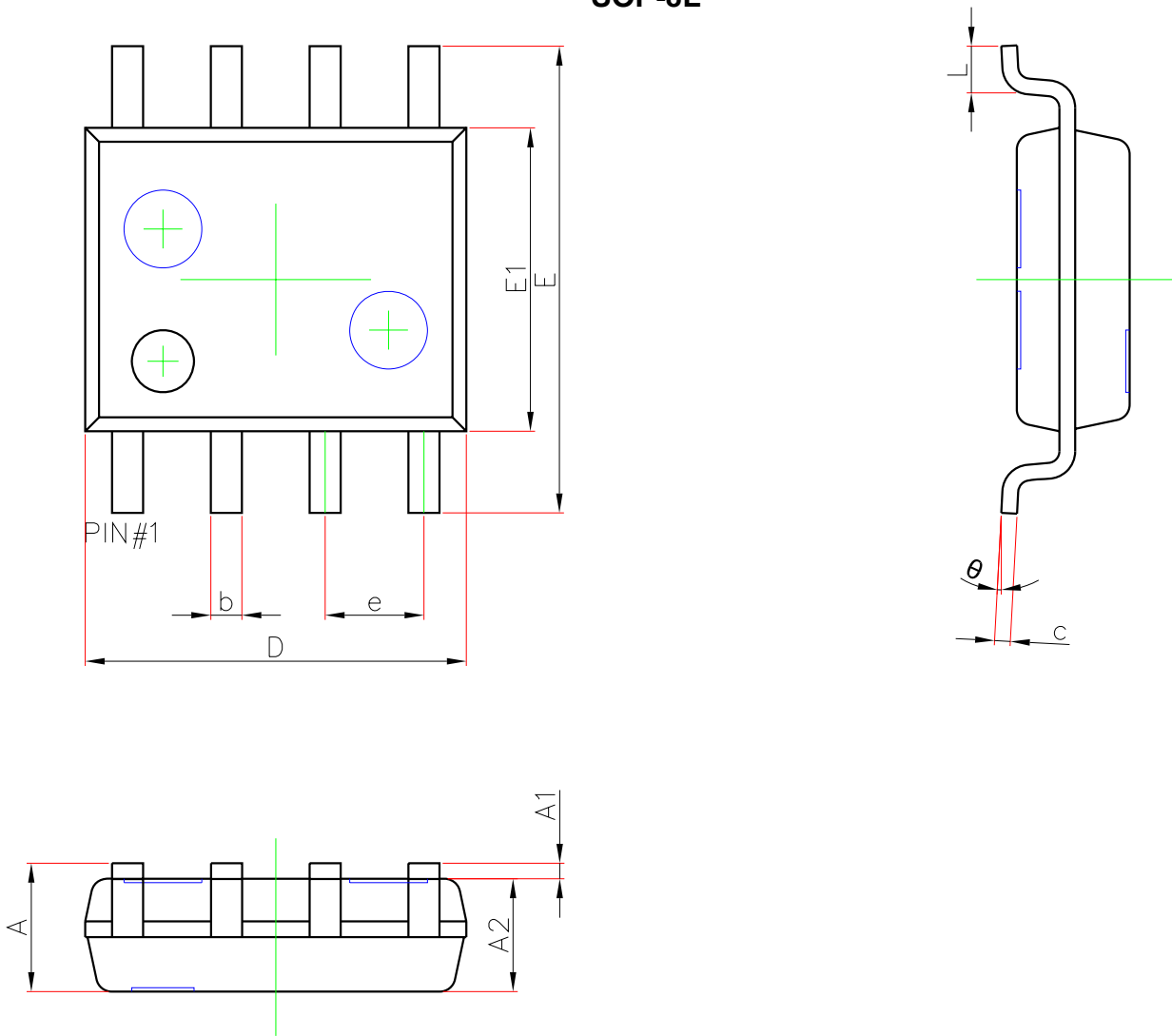


Single pulse power



Safe operating power



**Package outline dimensions**
**SOP-8L**


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.350	1.550	1.750
A1	0.100	0.175	0.250
A2	1.350	1.450	1.550
b	0.330	0.420	0.510
c	0.170	0.210	0.250
D	4.700	4.900	5.100
E	5.800	6.000	6.200
E1	3.800	3.900	4.000
e	1.270(BSC)		
L	0.400	0.600	0.800
$\theta$	0°		8°