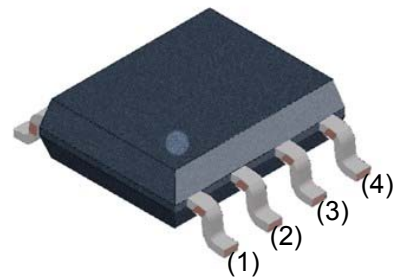
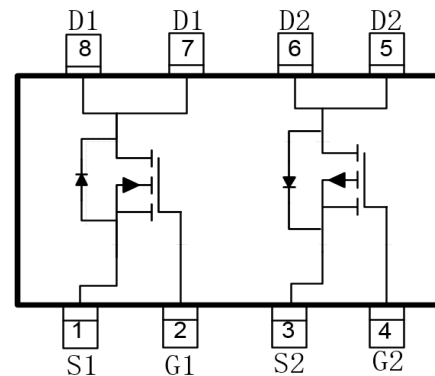
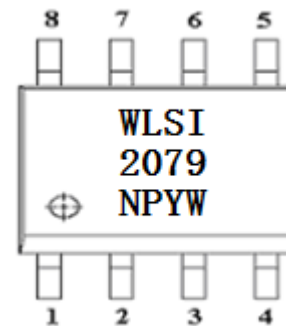


WCM2079
N- and P-Channel Complementary, 20V, MOSFET
<http://www.sh-willsemi.com>

V _{DS} (V)	Typical R _{DS(on)} (Ω)
N-Channel 20	0.020@V _{GS} =10V
	0.023@V _{GS} =4.5V
P-Channel -20	0.028@V _{GS} =-10V
	0.035@V _{GS} =-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_{DS(ON)} 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	± 20		± 20		V	
I_D	Continuous Drain Current ^{a d}	$T_A=25^\circ\text{C}$	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 ^{a d}	$T_A=25^\circ\text{C}$	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 ^{b d}	$T_A=25^\circ\text{C}$	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 ^{b d}	$T_A=25^\circ\text{C}$	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 ^c	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 ^a	$t \leq 10$ s	$R_{\theta JA}$	56	65	$^\circ\text{C}/\text{W}$
	Steady State		87	105	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10$ 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

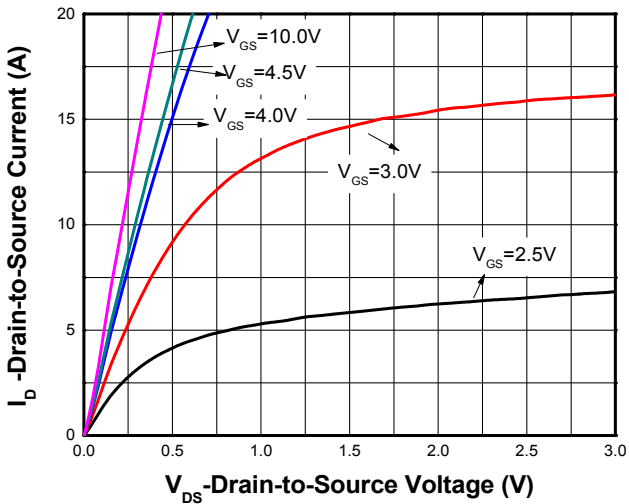
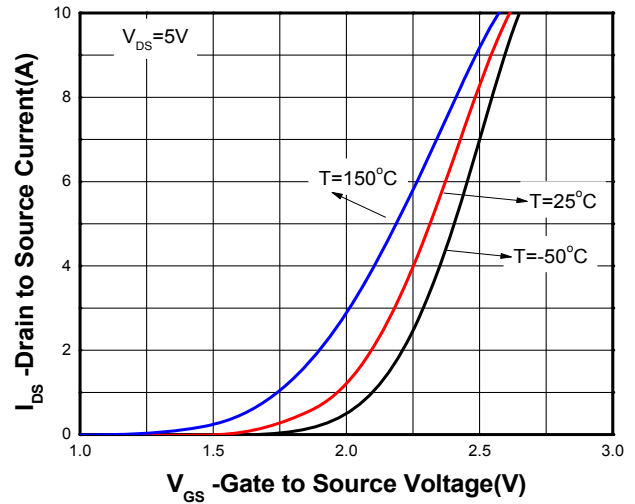
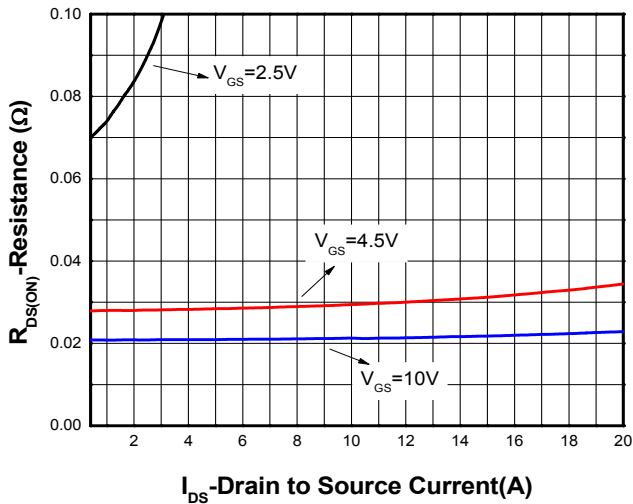
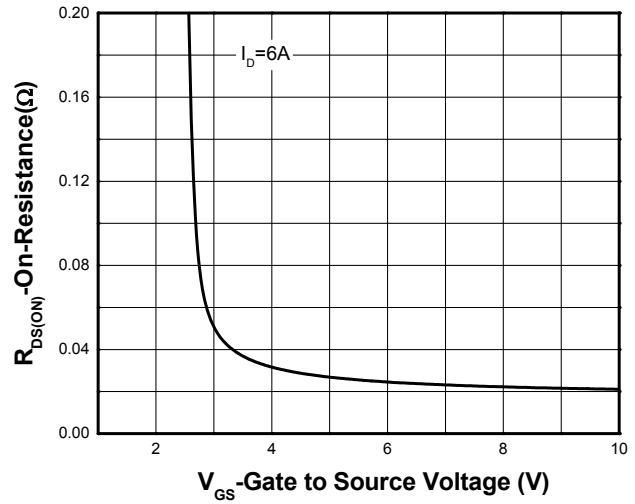
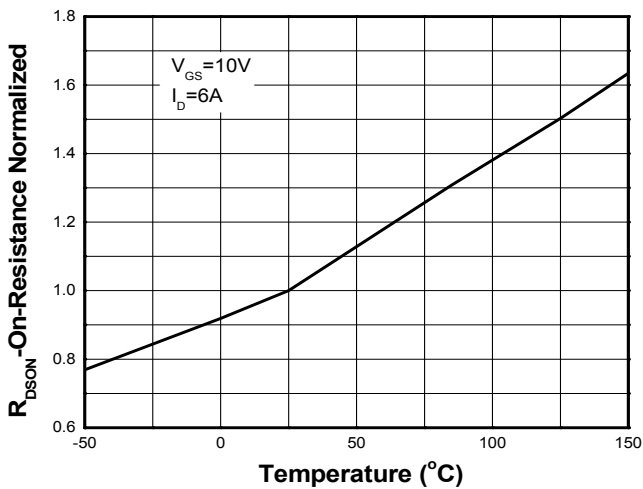
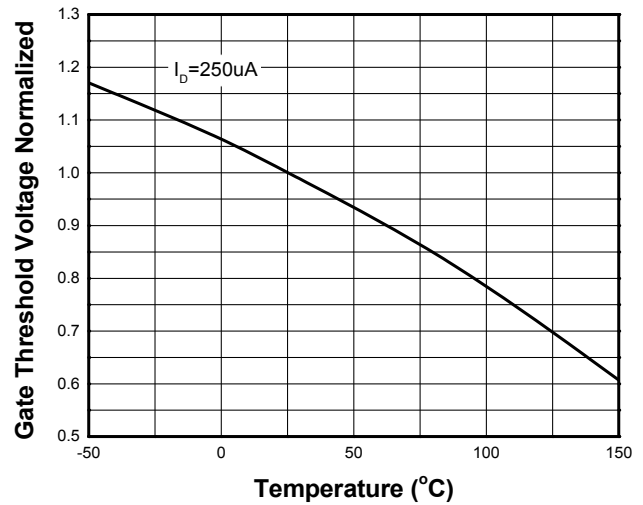
b Surface mounted on FR4 board using minimum pad size, 1oz copper

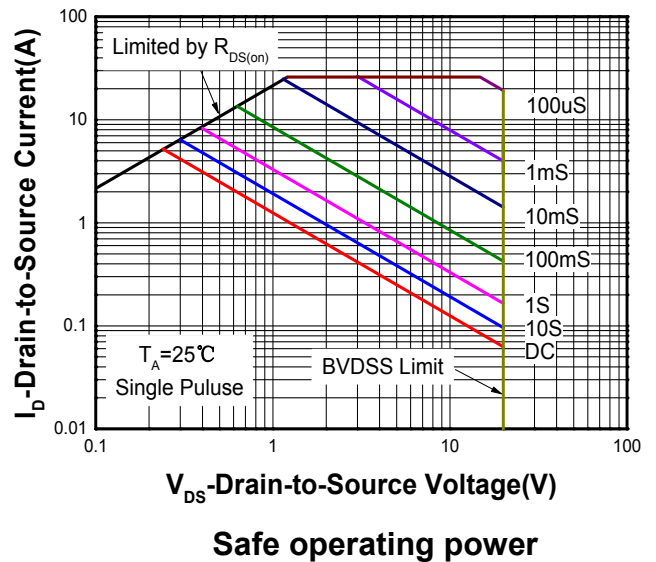
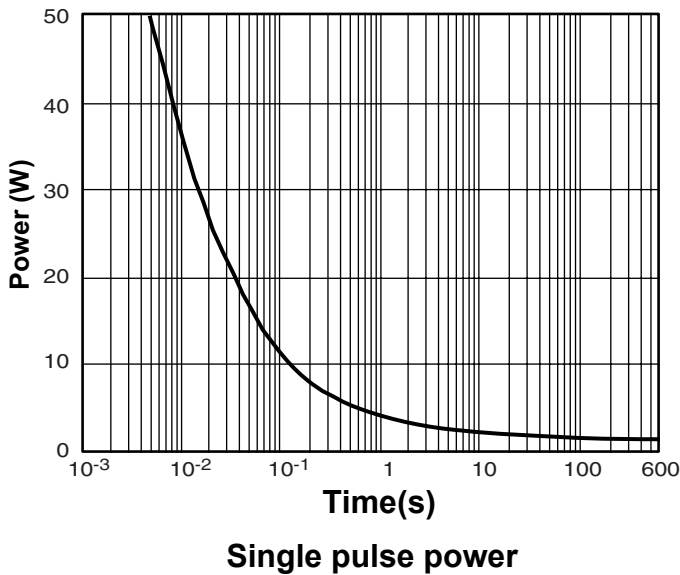
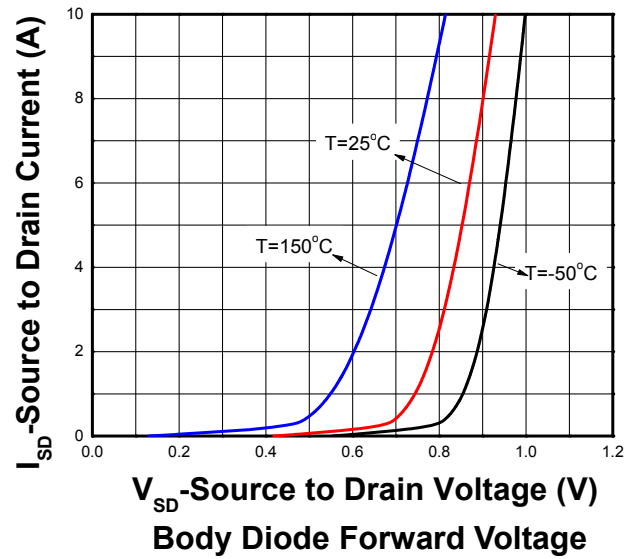
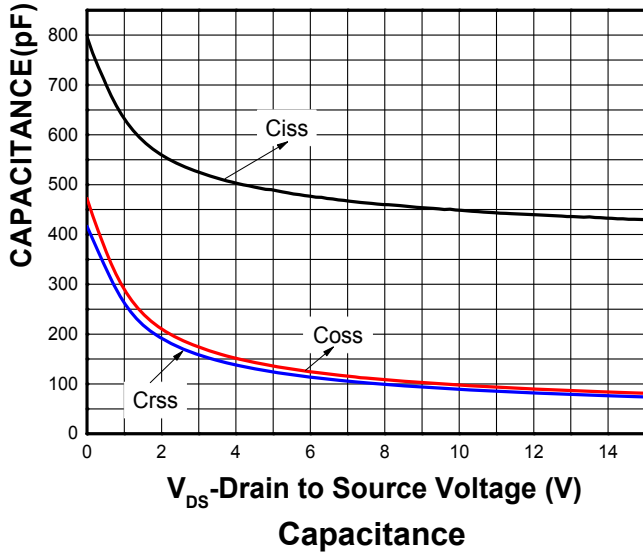
c Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, Duty Cycle=1%

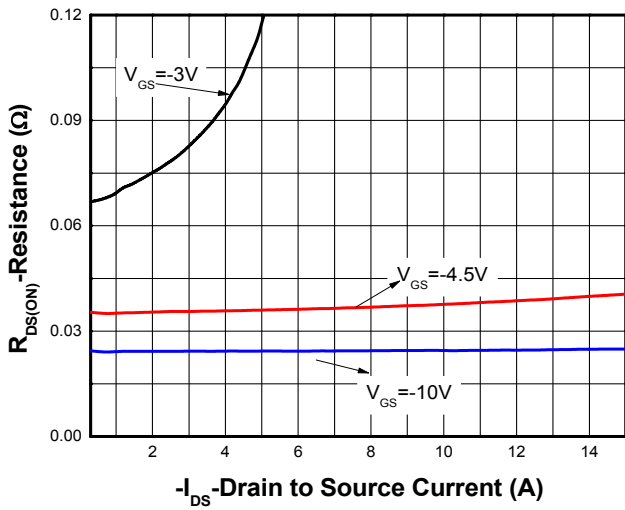
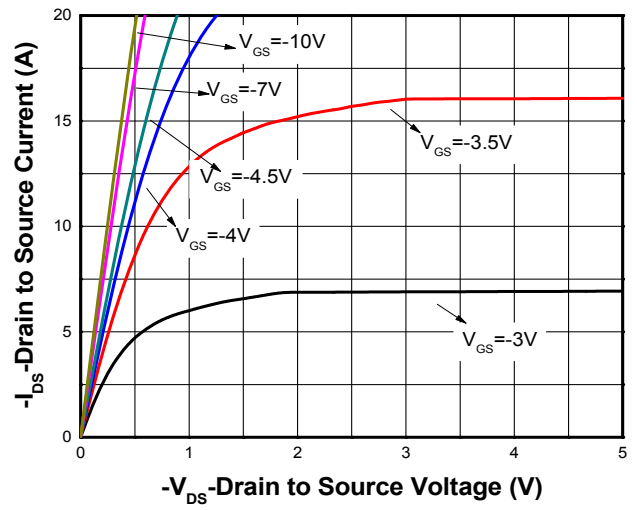
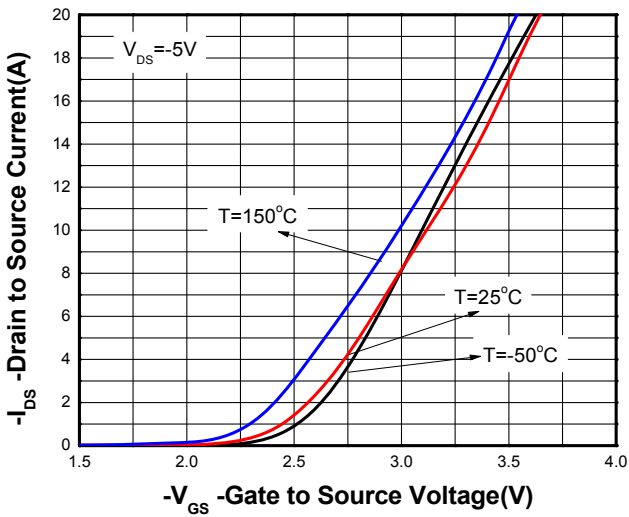
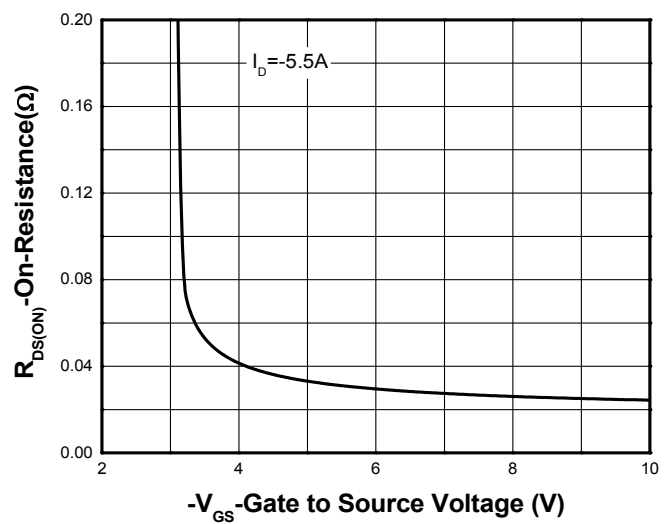
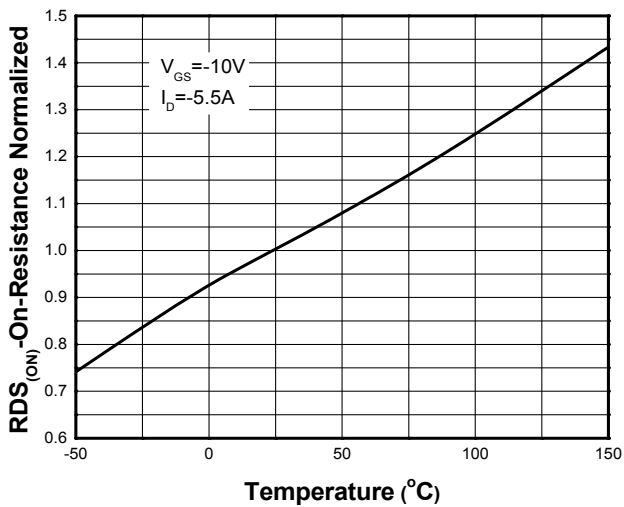
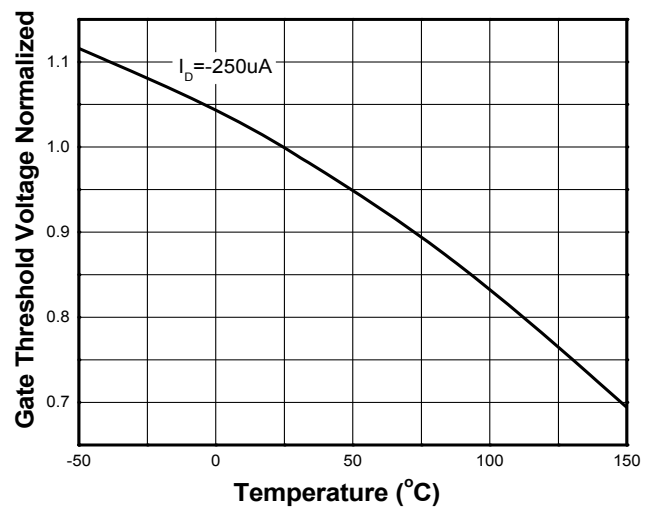
d Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ\text{C}$.

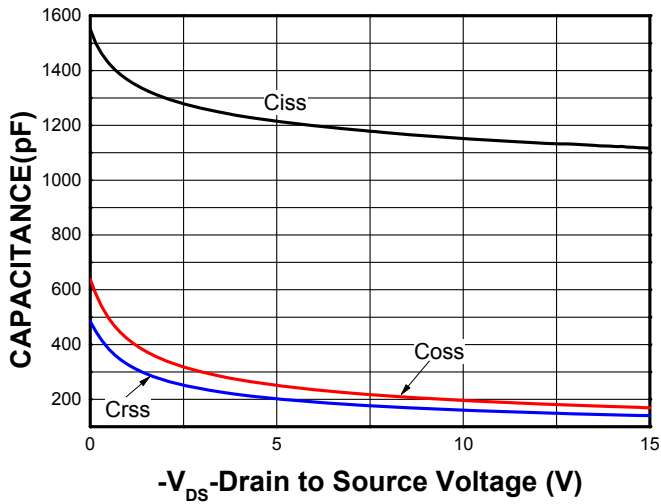
Electronics Characteristics (T_A=25°C unless otherwise noted)

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

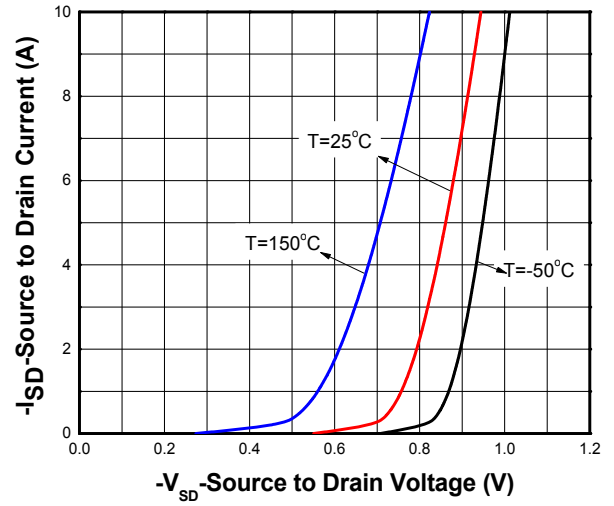
Typical Characteristics (N-Channel Ta=25°C, unless otherwise noted)

Output characteristics

Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-source

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature



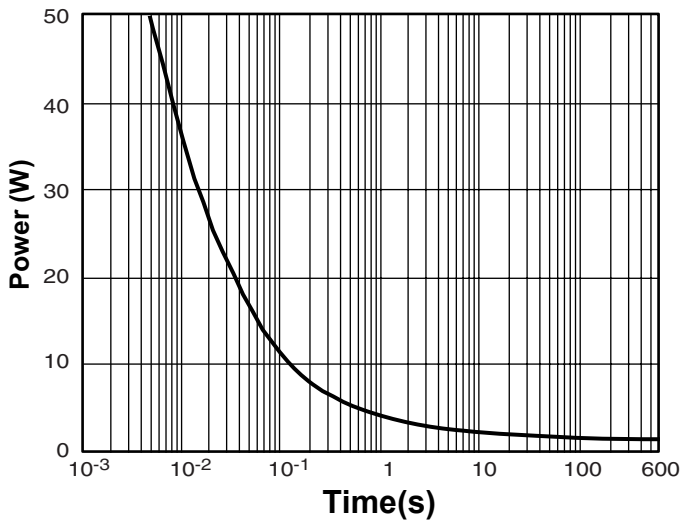
Typical Characteristics (P-Channel Ta=25°C, unless otherwise noted)

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



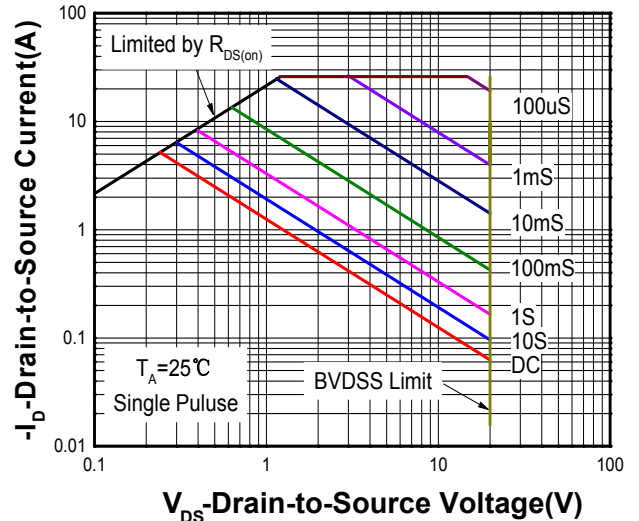
Capacitance



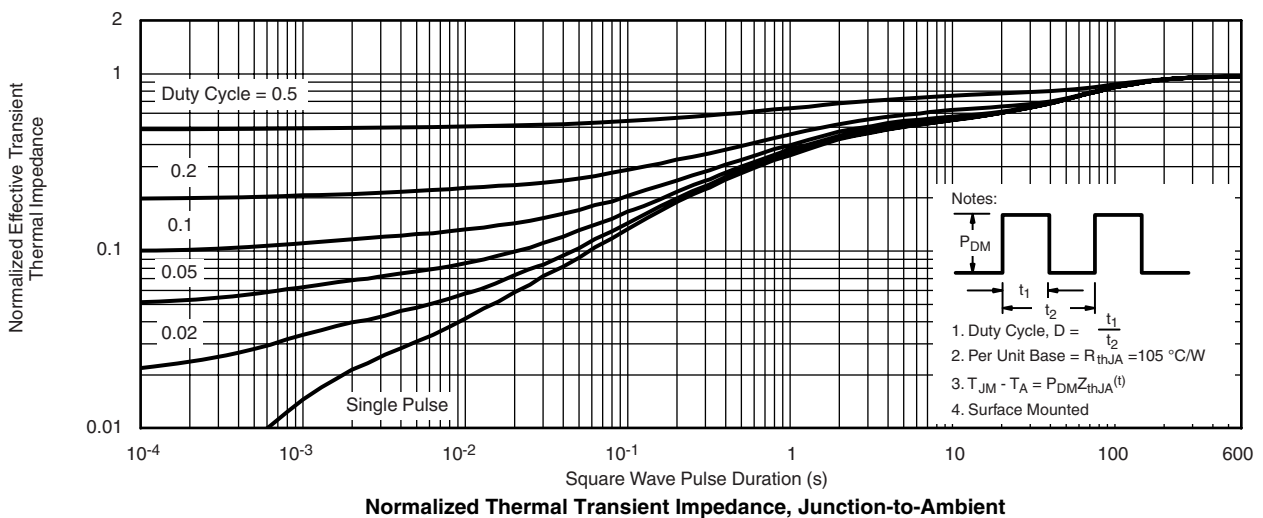
Body Diode Forward Voltage

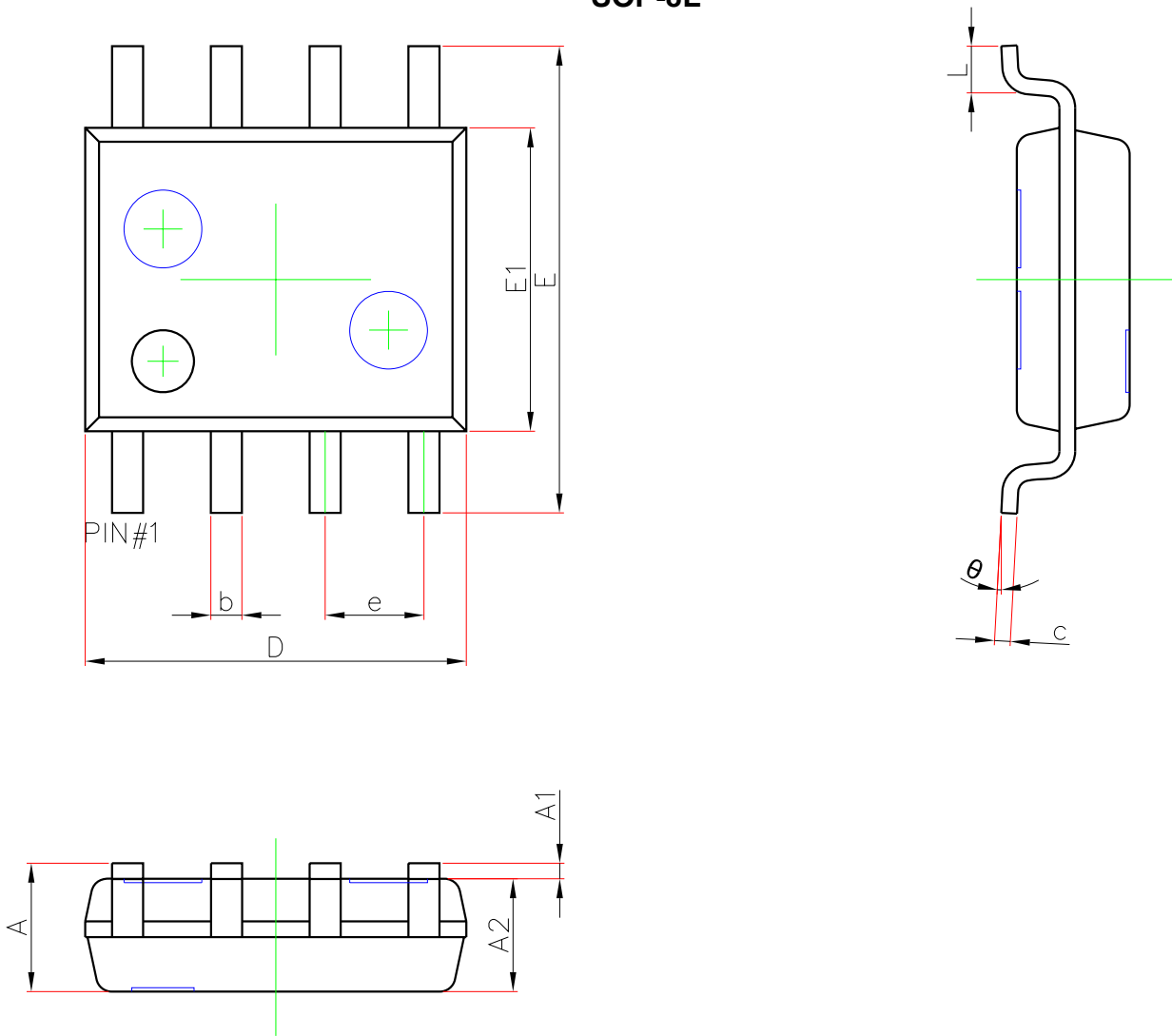


Single pulse power



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
θ	0°		8°

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