



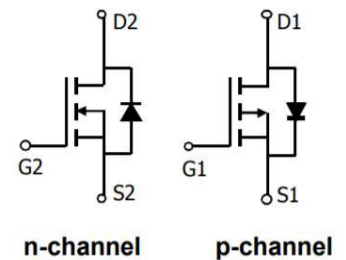
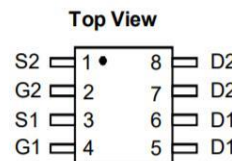
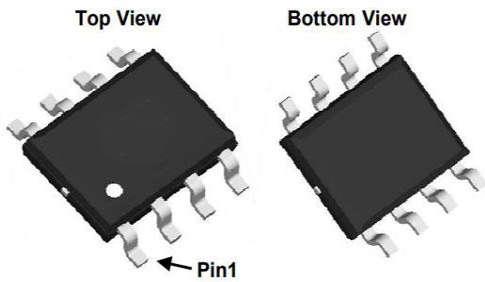
N+P Complementary Power MOSFET

General Description

0
 Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=4.5\text{ V}$
 Pb-free lead plating; RoHS compliant

N channel P channel

V_{DS}	30	-30	V
$R_{DS(on),TYP@V_{GS}=10V}$	14.0	23.0	$m\Omega$
$R_{DS(on),TYP@V_{GS}=4.5}$	18.0	23.0	$m\Omega$
I_D	10	23	A



Part ID	Package Type	Marking	Tape and reel information
SM4616PRL	SOP8	4616	3000



100% UIS Tested

Parameter	Symbol	Max N-channel	Max P-channel	Units	
Drain-Source Voltage	V_{DS}	30	-30	V	
Gate-Source Voltage	V_{GS}	20	20	$\pm V$	
Continuous Drain Current ^A	I_D	$T_A=25^\circ C$	10	-8	A
		$T_A=70^\circ C$	8	-6	
Pulsed Drain Current ^B	I_{DM}	16	-12.8		
Avalanche Current ^G	I_{AR}	3.2	-2.6		
Repetitive avalanche energy $L=0.1mH$ ^G	E_{AR}	7.36	-5.9	mJ	
Power Dissipation ^A	P_D	$T_A=25^\circ C$	2	2	W
		$T_A=70^\circ C$	1.3	1.3	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	$^\circ C$	

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	70	105	$^\circ C/W$
Maximum Junction-to-Ambient ^A		Steady State	140	168
Maximum Junction-to-Lead ^c	$R_{\theta JL}$	42	67	$^\circ C/W$


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STATIC PARAMETERS

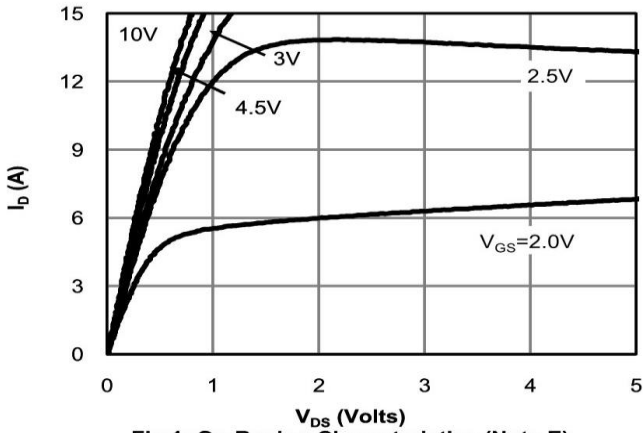
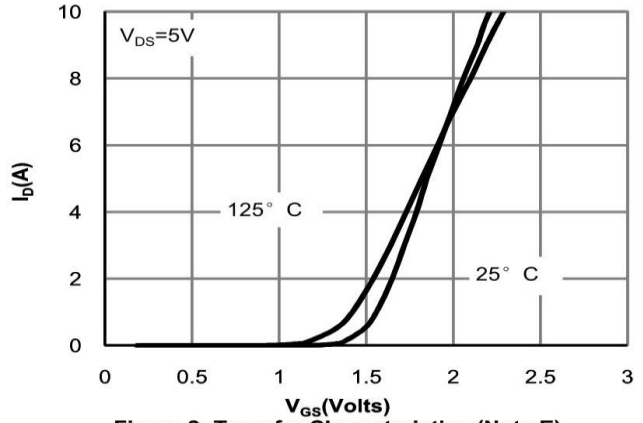
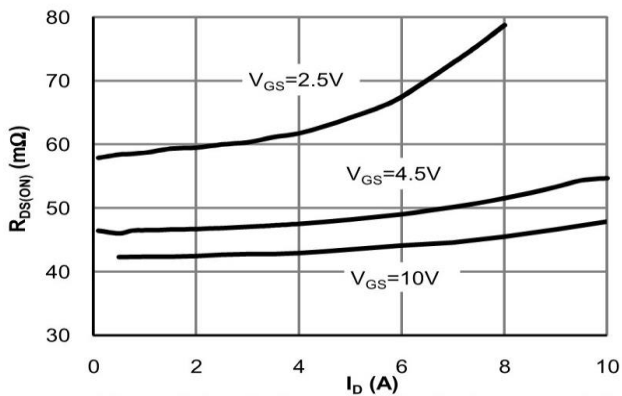
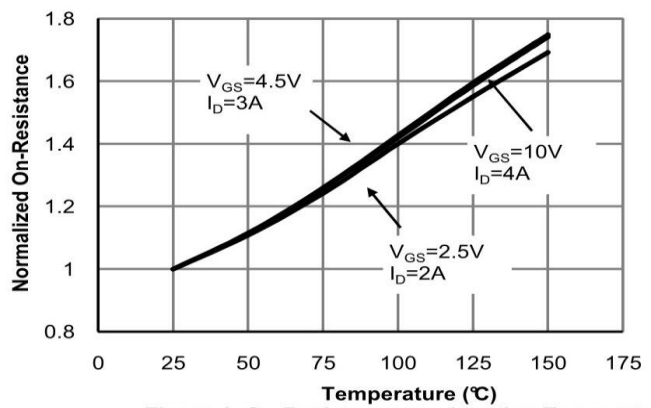
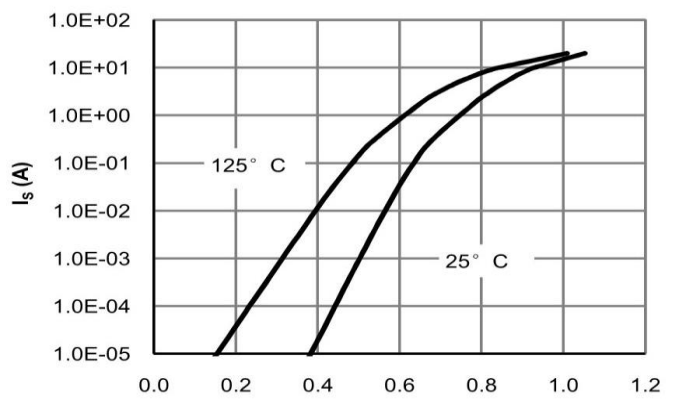
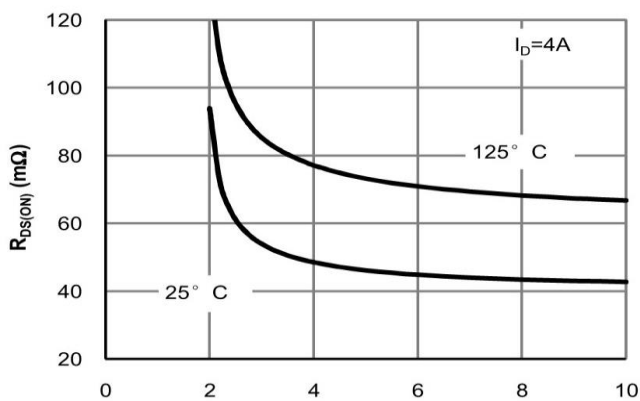
Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = -250μA, V _{GS} = 0V	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V			1	μA
					5	
I _{GSS}	Gate-Body leakage current	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} I _D = 250μA	1.2	1.8	2.4	V
R _{DS(on)}	Static Drain-Source On-Resistance	#REF!		14.0	20.0	mΩ
		V _{GS} =4.5V, I _D =8.5A		18.0	23.4	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =8.5A		46		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =41V		0.72	1	V
I _S	Maximum Body-Diode Continuous Current				8.5	A

DYNAMIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		740	902	pF
C _{oss}	Output Capacitance			110	135	pF
C _{rss}	Reverse Transfer Capacitance			82	97	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz			1.5	Ω

SWITCHING PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =8.5A		7.5		nC
Q _g 4.5V)	Total Gate Charge			3.75		
Q _{gs}	Gate Source Charge			2.1		
Q _{gd}	Gate Drain Charge			3		
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω, R _{GEN} =3Ω		4		ns
t _r	Turn-On Rise Time			3.2		
t _{D(off)}	Turn-Off DelayTime			11.2		
t _f	Turn-Off Fall Time			3.6		
t _{rr}	Body Diode Reverse Recovery Time	I _F =-8A, dI/dt=500A/μs		8		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =18A, dI/dt=500A/μs		18		nC

N+P Complementary Power MOSFET
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Fig 1: On-Region Characteristics (Note E)

Figure 2: Transfer Characteristics (Note E)

Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

Figure 4: On-Resistance vs. Junction Temperature (Note E)


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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

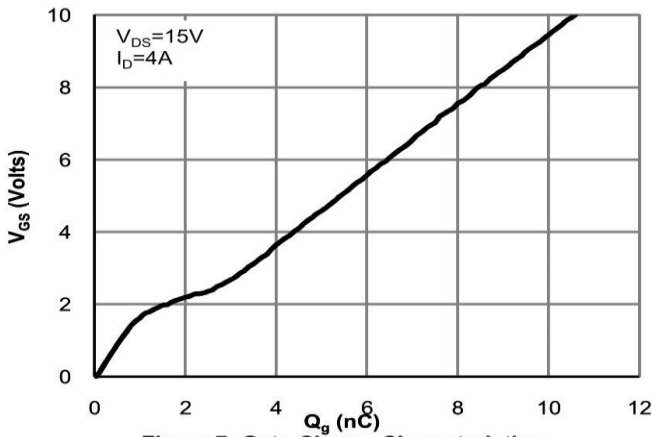


Figure 7: Gate-Charge Characteristics

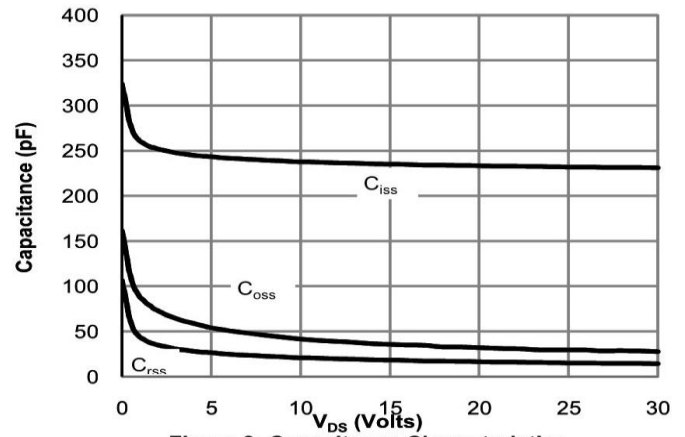


Figure 8: Capacitance Characteristics

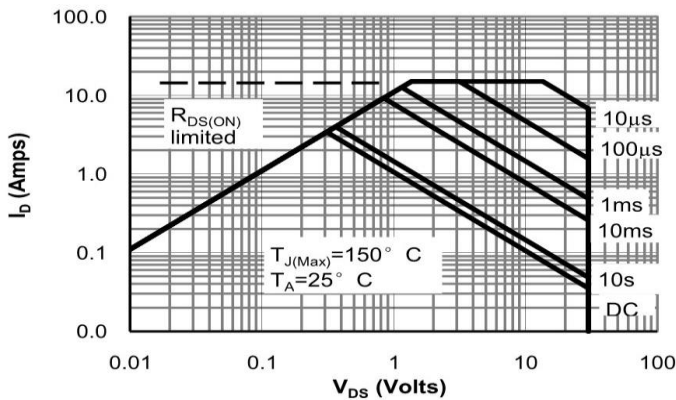


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

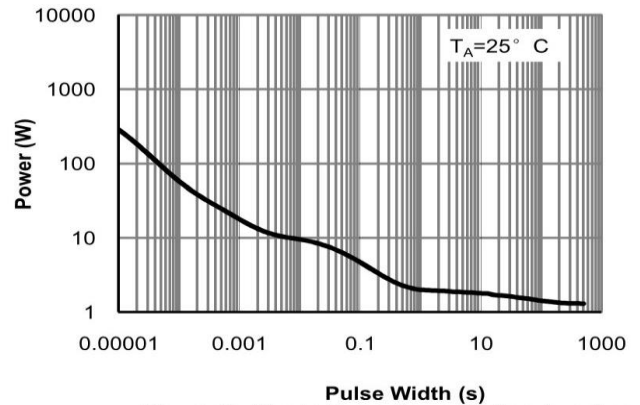


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

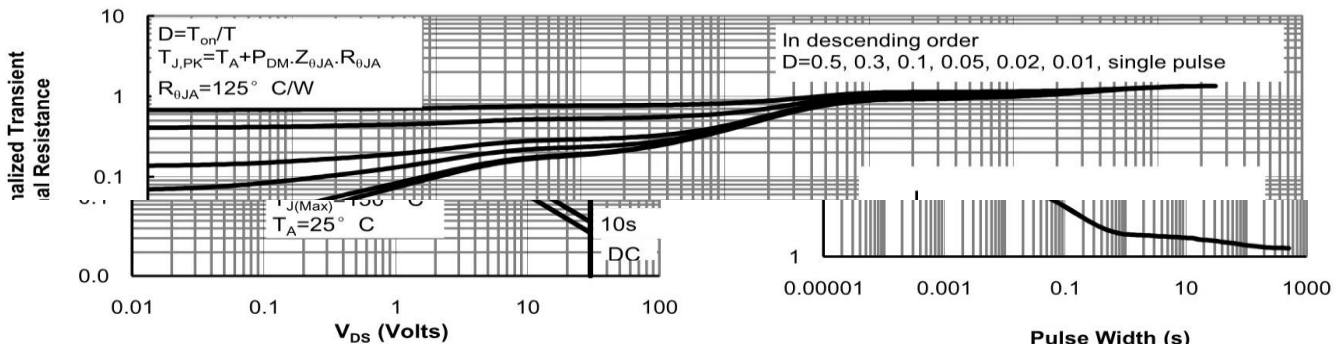


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

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