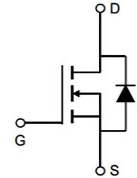
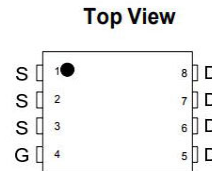
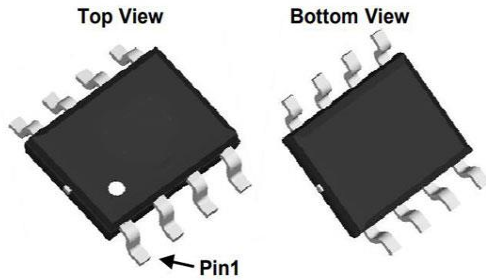


**30V /10A Complementary NP Power MOSFET**
**General Description**

30V /10A Complementary NP Power MOSFET  
 Very low on-resistance  $R_{DS(on)}$  @  $V_{GS}=4.5$  V  
 Pb-free lead plating; RoHS compliant

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



Part ID	Package Type	Marking	Tape and reel information
SM4404BPRL	SOP8	4404	3000



100% UIS Tested  
 100% Kg Tested

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	20	$\pm V$
Continuous Drain Current <sup>A</sup>	$I_D$	$T_A=25^\circ C$	A
		$T_A=70^\circ C$	
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	16.0	
Avalanche Current <sup>C</sup>	$I_{AR}$	3.2	
Repetitive avalanche energy $L=0.1mH$ <sup>C</sup>	$E_{AR}$	7.4	mJ
Power Dissipation <sup>A</sup>	$P_D$	$T_A=25^\circ C$	W
		$T_A=70^\circ C$	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

**Thermal Characteristics**

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



**STATIC PARAMETERS**

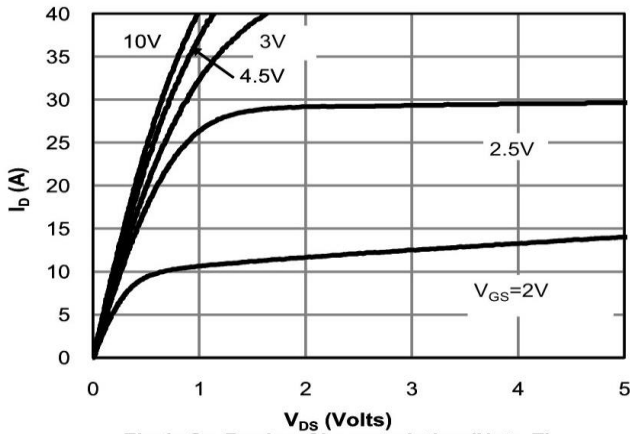
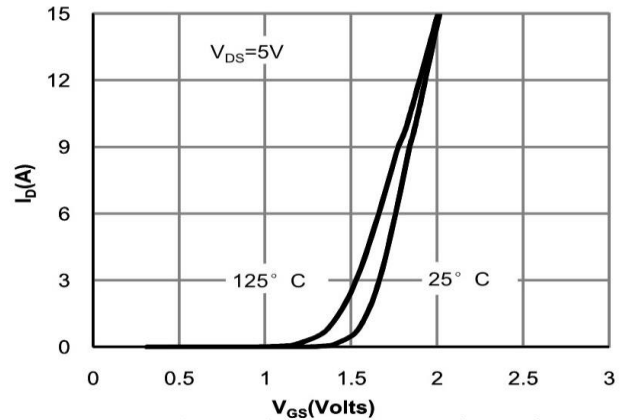
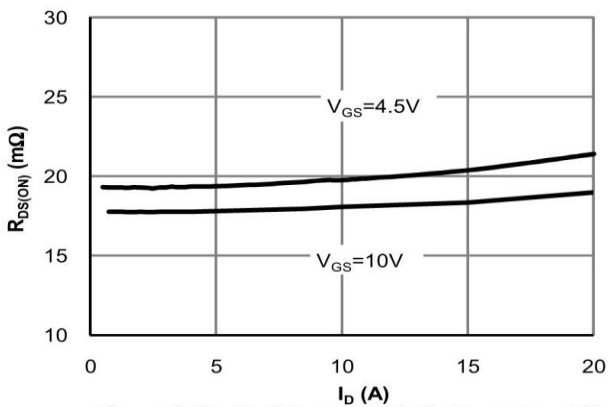
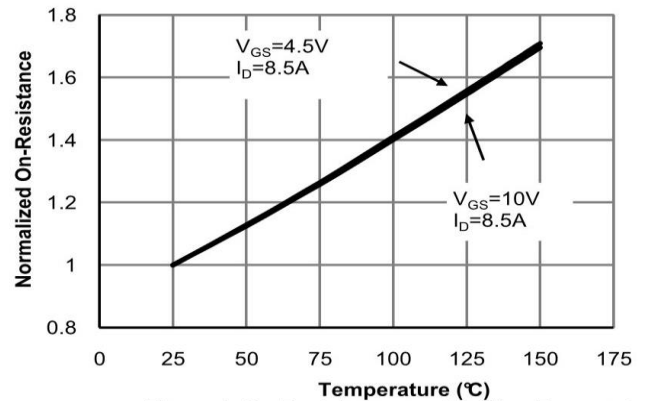
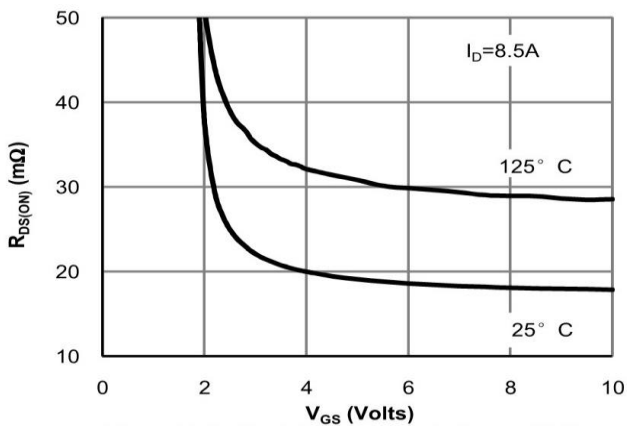
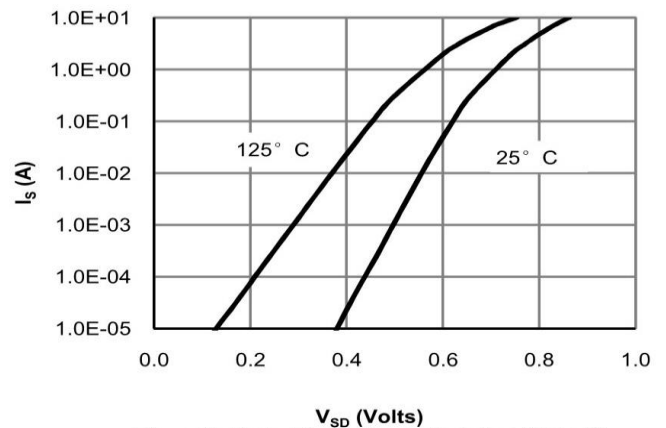
Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = -250uA, V <sub>GS</sub> = 0V	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1 5	uA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250µA	1.2	1.8	2.4	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =8.5A		14.0	20.0	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =8.5A		18.0	23.4	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =8.5A		46		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =41V		0.72	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				8.5	A

**DYNAMIC PARAMETERS**

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

**SWITCHING PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Q <sub>g</sub> (10V)	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =8.5A		7.5		nC
Q <sub>g</sub> 4.5V)	Total Gate Charge			3.75		
Q <sub>gs</sub>	Gate Source Charge			2.1		
Q <sub>gd</sub>	Gate Drain Charge			3		
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =0.75Ω, R <sub>GEN</sub> =3Ω		4		ns
t <sub>r</sub>	Turn-On Rise Time			3.2		
t <sub>D(off)</sub>	Turn-Off DelayTime			11.2		
t <sub>f</sub>	Turn-Off Fall Time			3.6		
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-8A, dI/dt=500A/µs		8		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =18A, dI/dt=500A/µs		18		nC

**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)**

**Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)**

**Figure 6: Body-Diode Characteristics (Note E)**

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

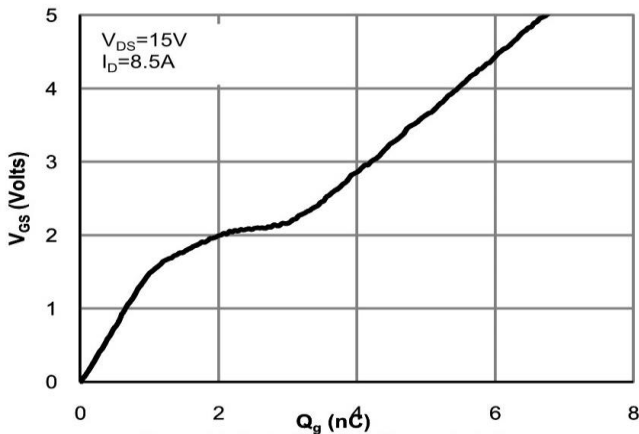


Figure 7: Gate-Charge Characteristics

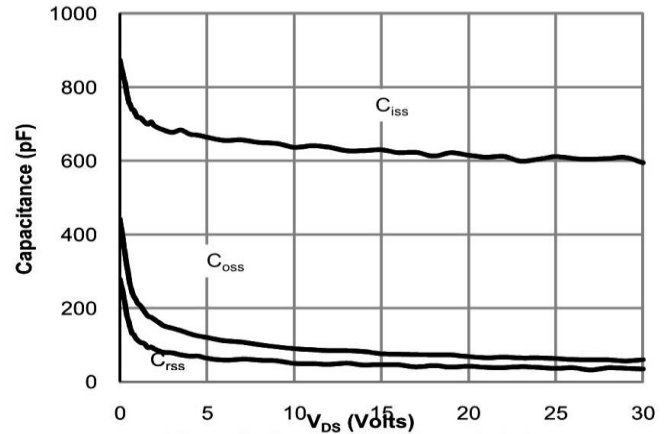


Figure 8: Capacitance Characteristics

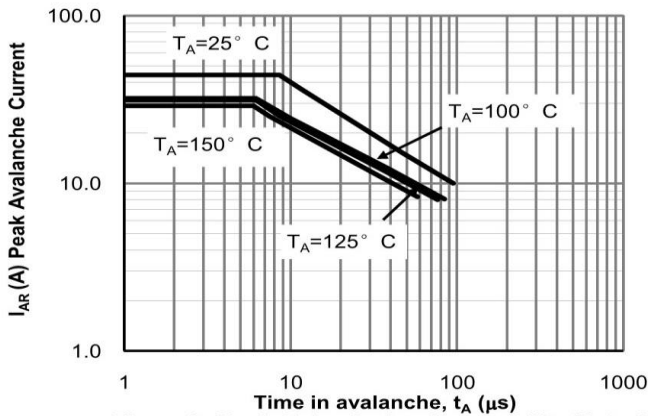


Figure 9: Single Pulse Avalanche capability (Note C)

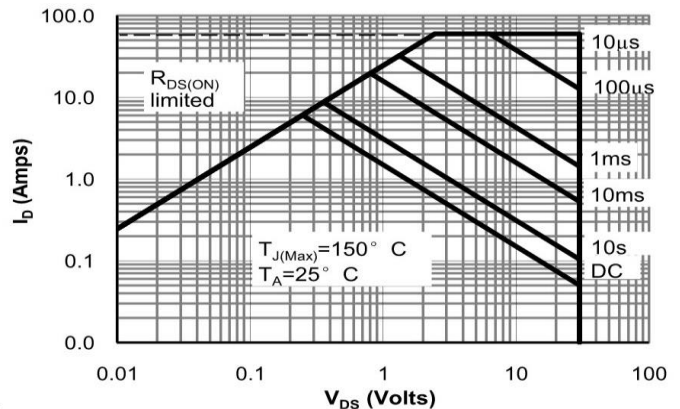


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

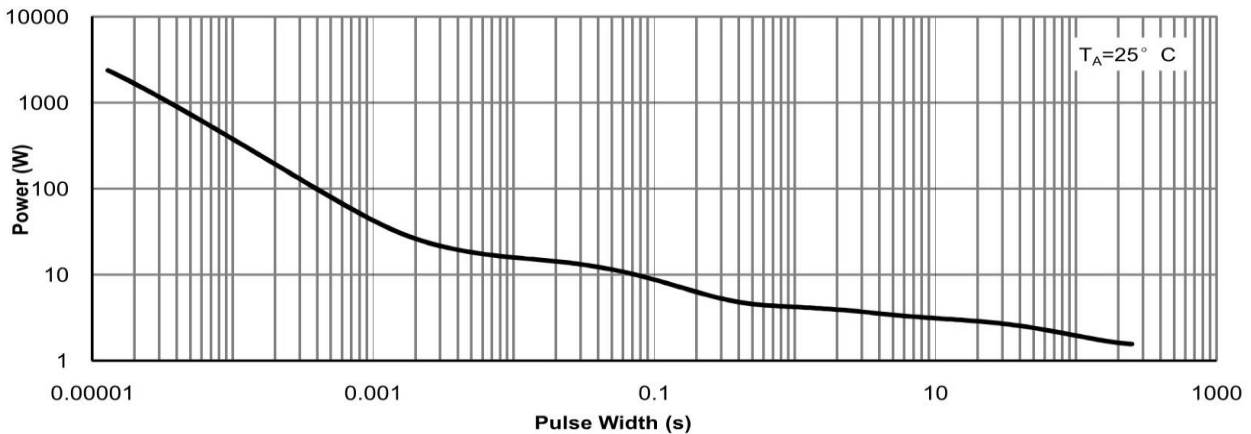


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

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