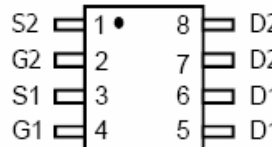
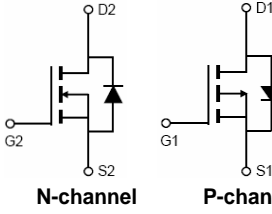



N and P-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>The 4622 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● N-Channel $V_{DS} = 20V, I_D = 6.4A$ $R_{DS(ON)} < 23m\Omega @ V_{GS}=4.5V$ $R_{DS(ON)} < 30m\Omega @ V_{GS}=2.5V$ ● P-Channel $V_{DS} = -20V, I_D = -6.4A$ $R_{DS(ON)} < 40m\Omega @ V_{GS}=-4.5V$ $R_{DS(ON)} < 50m\Omega @ V_{GS}=-2.5V$ ● High power and current handling capability ● Lead free product is acquired ● Surface mount package 	<p>SOP-8</p>  <p>Equivalent Circuit</p>  <p>MARKING</p>  <p>Y :year code W :week code</p>
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Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted				
Parameter	Symbol	Max n-channel	Max p-channel	Units
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	± 16	± 12	V
Continuous Drain Current ^{AF}	I_D	6.4	-6.4	A
Pulsed Drain Current ^B	I_{DM}	35	-25	
Power Dissipation	P_D	2	2	W
Avalanche Current ^B	I_{AR}	13	13	A
Repetitive avalanche energy 0.3mH ^B	E_{AR}	25	25	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	$^\circ C$

Thermal Characteristics: n-channel and p-channel						
Parameter	Symbol	Device	Typ	Max	Units	
Maximum Junction-to-Ambient ^A	$t \leq 10s$	$R_{\theta JA}$	n-ch	48	62.5	$^\circ C/W$
Maximum Junction-to-Ambient ^A			Steady-State	n-ch	74	110
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	n-ch	35	40	$^\circ C/W$
Maximum Junction-to-Ambient ^A	$t \leq 10s$	$R_{\theta JA}$	p-ch	48	62.5	$^\circ C/W$
Maximum Junction-to-Ambient ^A			Steady-State	p-ch	74	110
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	p-ch	35	40	$^\circ C/W$



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N-Channel Electrical Characteristics (T_j=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±16V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =250μA	0.6	1.25	2	V
I _{D(ON)}	On state drain current	V _{GS} =4.5V, V _{DS} =5V	35			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =4.5V, I _D =6.4A		15	23	mΩ
		V _{GS} =2.5V, I _D =4.5A		20	30	Ω
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =6.4A		17		S
V _{SD}	Diode Forward Voltage	I _S =1A		0.7	1	V
I _S	Maximum Body-Diode Continuous Current				3	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, f=1MHz		900	1100	pF
C _{oss}	Output Capacitance			162		pF
C _{rss}	Reverse Transfer Capacitance			105		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		0.9	1.35	Ω
SWITCHING PARAMETERS						
Q _{g(10V)}	Total Gate Charge	V _{GS} =10V, V _{DS} =10V, I _D =6.5A		15	18	nC
Q _{g(4.5V)}	Total Gate Charge			7.2	9	nC
Q _{gs}	Gate Source Charge			1.8		nC
Q _{gd}	Gate Drain Charge			2.8		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =10V, R _L =1.4Ω, R _{GEN} =3Ω		4.5		ns
t _r	Turn-On Rise Time			9.2		ns
t _{D(off)}	Turn-Off DelayTime			18.7		ns
t _f	Turn-Off Fall Time			3.3		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =6.4A, di/dt=100A/μs		18		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =6.4A, di/dt=100A/μs		9.5		nC

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient. R_{θJL} and R_{θJC} are equivalent terms referring to thermal resistance from junction to drain lead.

D: The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

F: The current rating is based on the t ≤ 10s thermal resistance rating.

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N-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

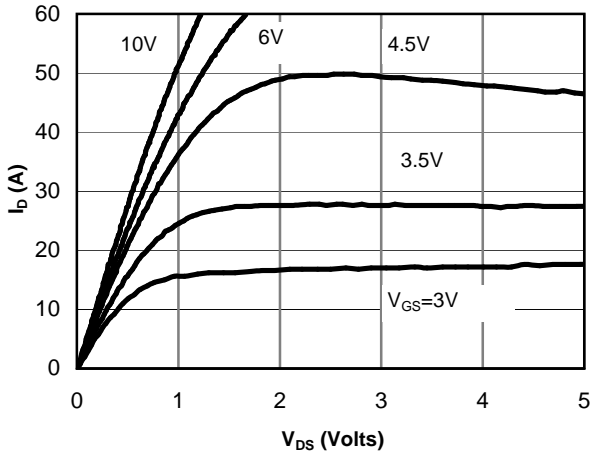


Figure 1: On-Region Characteristics

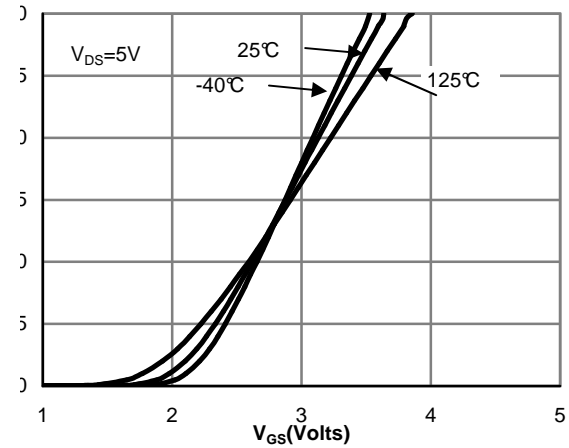


Figure 2: Transfer Characteristics

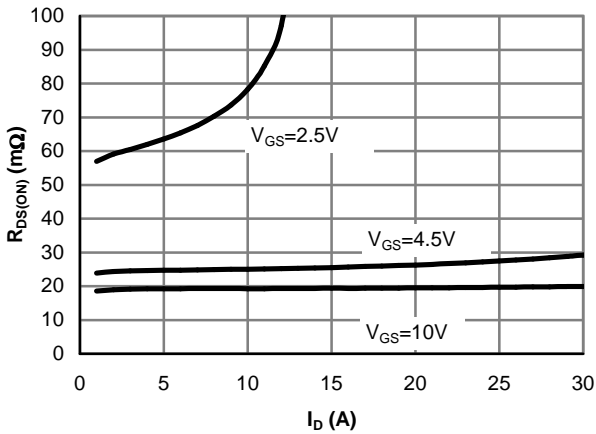


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

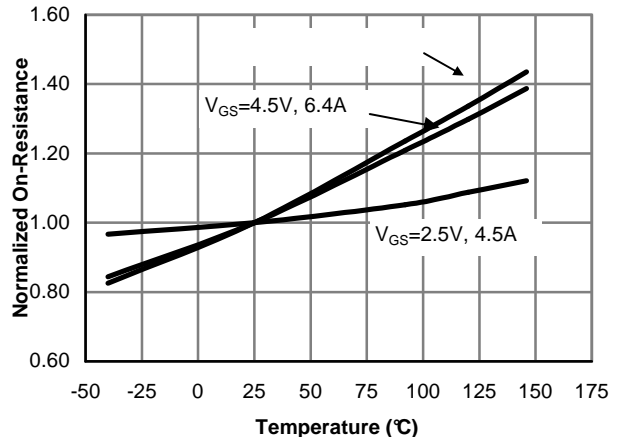


Figure 4: On-Resistance vs. Junction Temperature

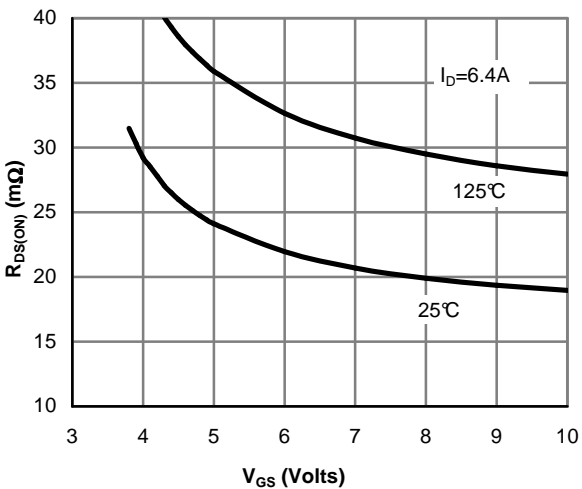


Figure 5: On-Resistance vs. Gate-Source Voltage

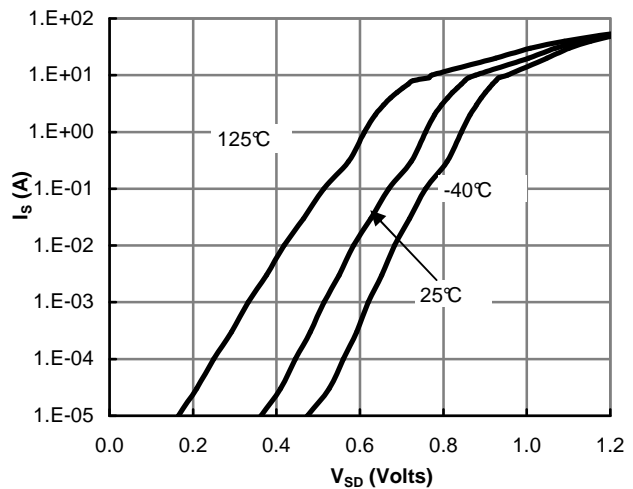


Figure 6: Body-Diode Characteristics

N-Channel TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

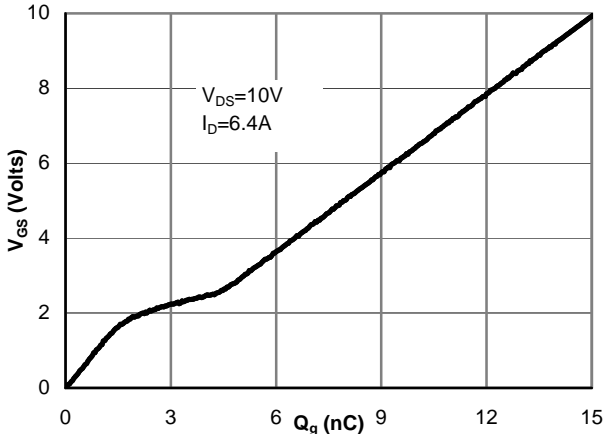


Figure 7: Gate-Charge Characteristics

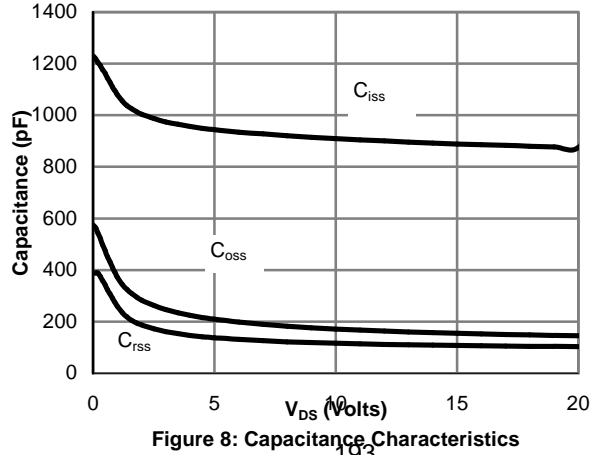


Figure 8: Capacitance Characteristics

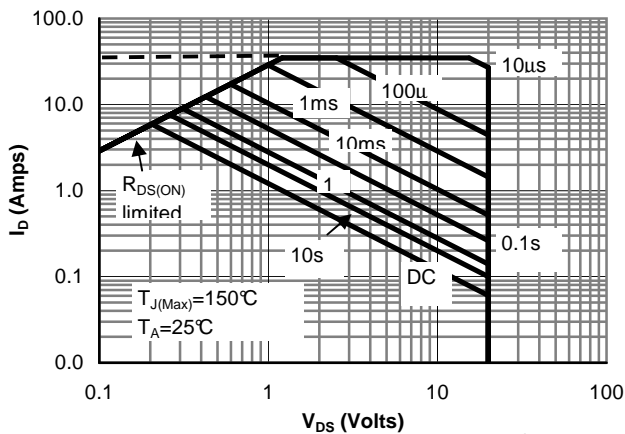


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

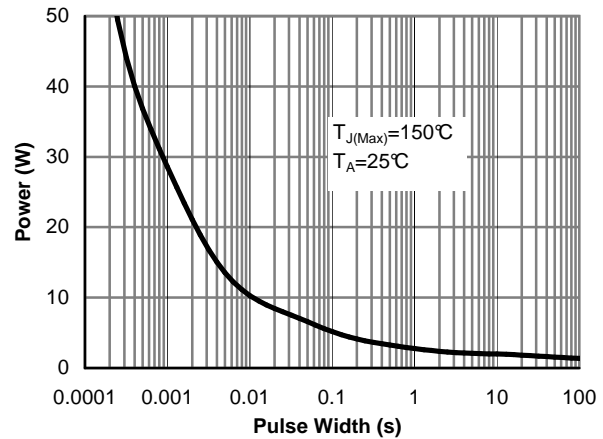


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

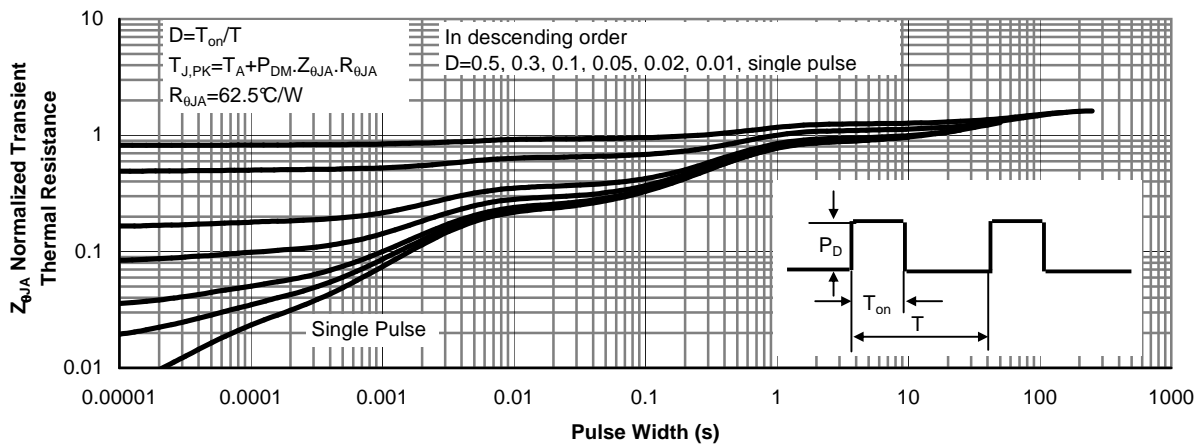


Figure 11: Normalized Maximum Transient Thermal Impedance



SOP-8 Plastic-Encapsulate MOSFETS

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P-Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±12V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =-250μA	-1.3	-0.9	-0.5	V
I _{D(ON)}	On state drain current	V _{GS} =-4.5V, V _{DS} =-5V	-25			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-6.4A		30	40	mΩ
		V _{GS} =-2.5V, I _D =-4.5A		40	50	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-5A		13		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.76	-1	V
I _S	Maximum Body-Diode Continuous Current				-2.5	A
DYNAMIC PARAMETERS						
C _{ISS}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, f=1MHz		800	960	pF
C _{OSS}	Output Capacitance			131		pF
C _{RSS}	Reverse Transfer Capacitance			103		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		6.7	10	Ω
SWITCHING PARAMETERS						
Q _{g(10V)}	Total Gate Charge (10V)	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4.5A		15.5		nC
Q _{g(4.5V)}	Total Gate Charge (4.5V)			7.4		nC
Q _{gs}	Gate Source Charge			1.3		nC
Q _{gd}	Gate Drain Charge			2.9		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-4.5V, V _{DS} =-10V, R _L =2Ω, R _{GEN} =3Ω		4.4		ns
t _r	Turn-On Rise Time			7.6		ns
t _{D(off)}	Turn-Off DelayTime			44		ns
t _f	Turn-Off Fall Time			13.5		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-5A, di/dt=100A/μs		20		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-5A, di/dt=100A/μs		9		nC

A: The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient. R_{θJL} and R_{θJC} are equivalent terms referring to thermal resistance from junction to drain lead.

D: The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

F: The current rating is based on the t ≤ 10s thermal resistance rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS: P-CHANNEL

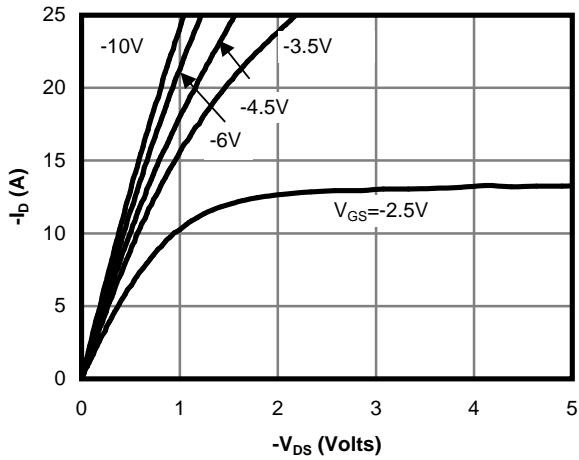


Fig 1: On-Region Characteristics

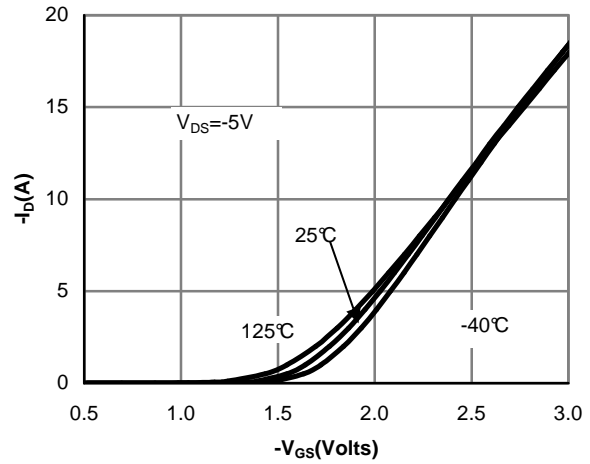


Figure 2: Transfer Characteristics

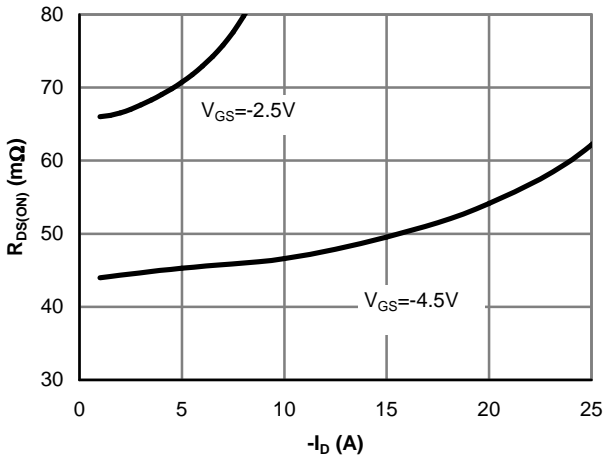


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

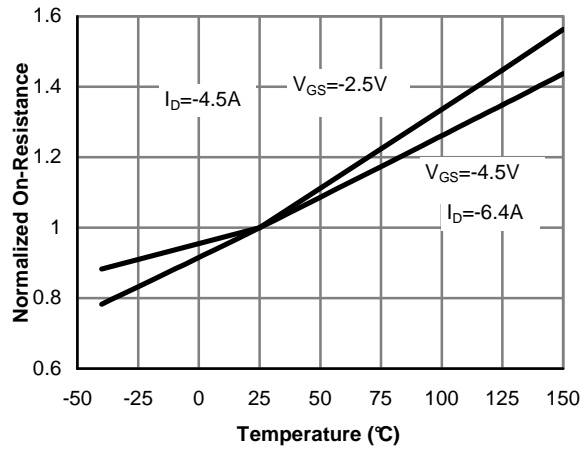


Figure 4: On-Resistance vs. Junction Temperature

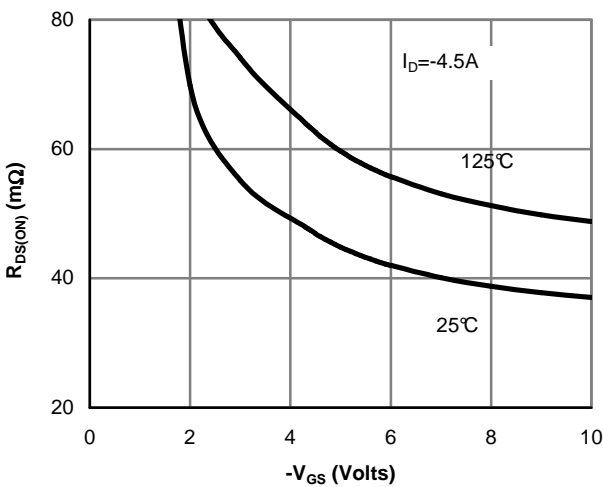


Figure 5: On-Resistance vs. Gate-Source Voltage

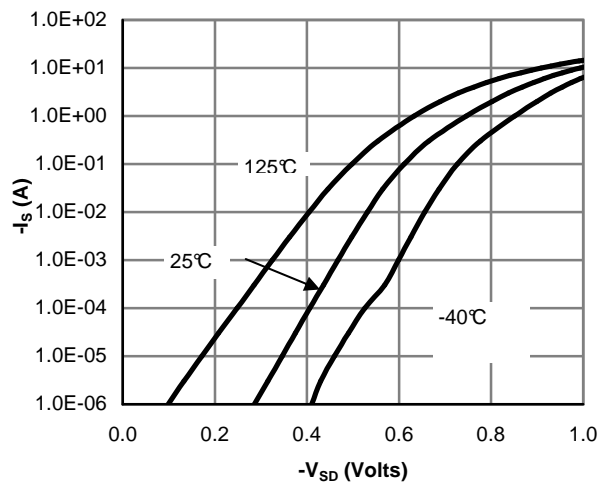


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS: P-C

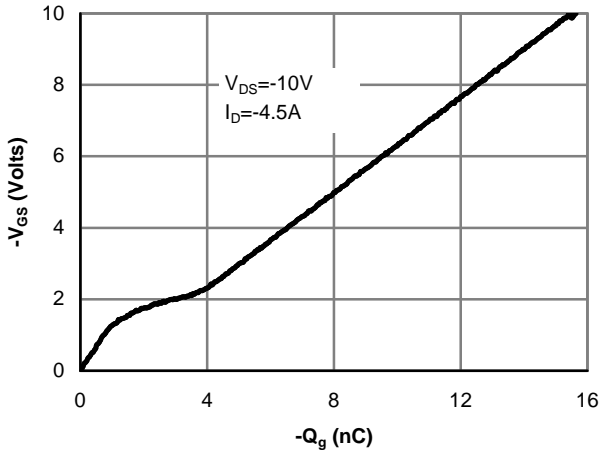


Figure 7: Gate-Charge Characteristics

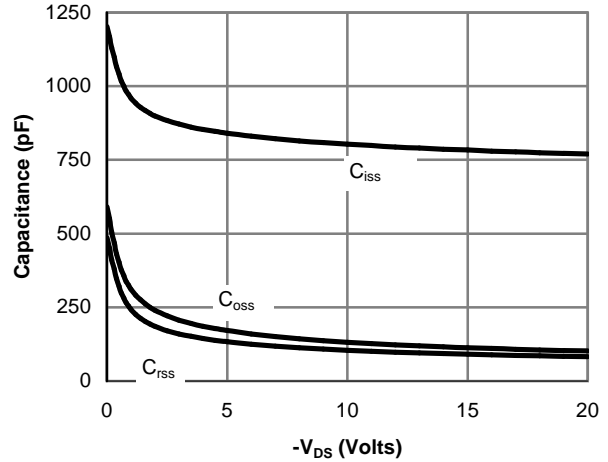


Figure 8: Capacitance Characteristics

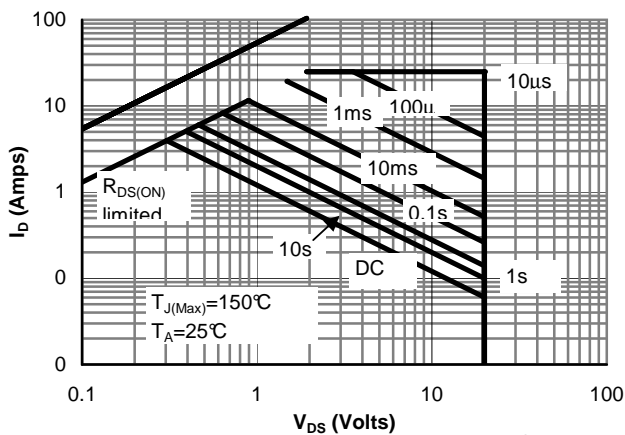


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

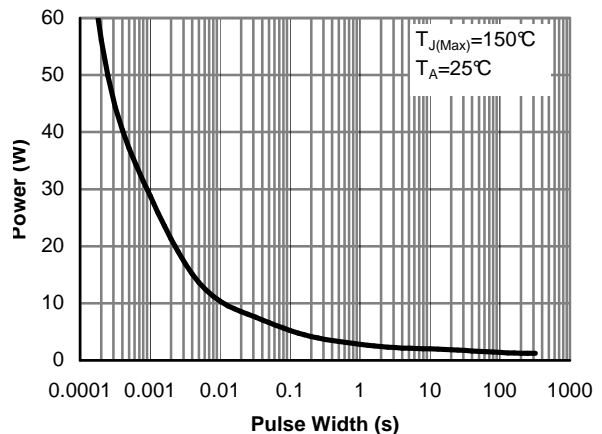


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

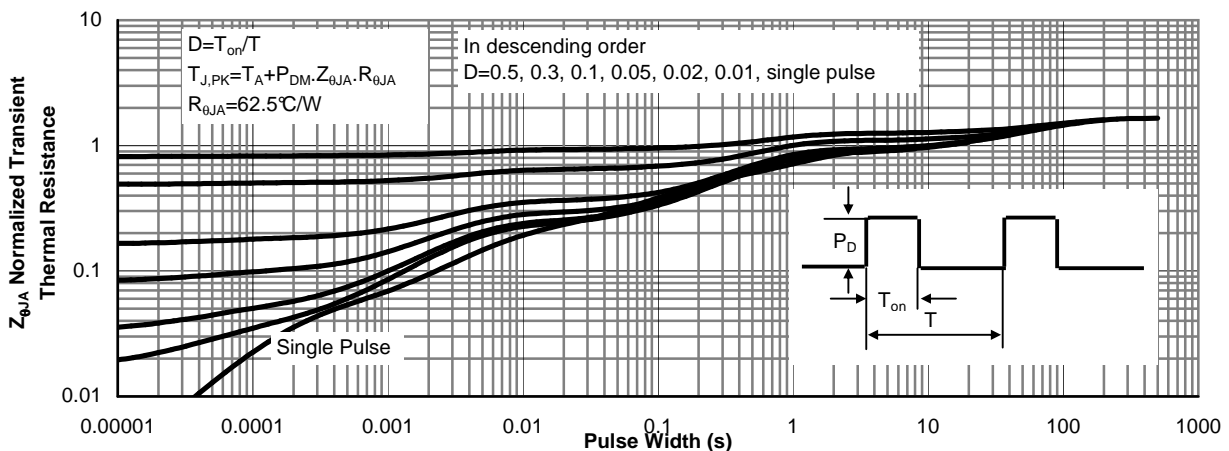
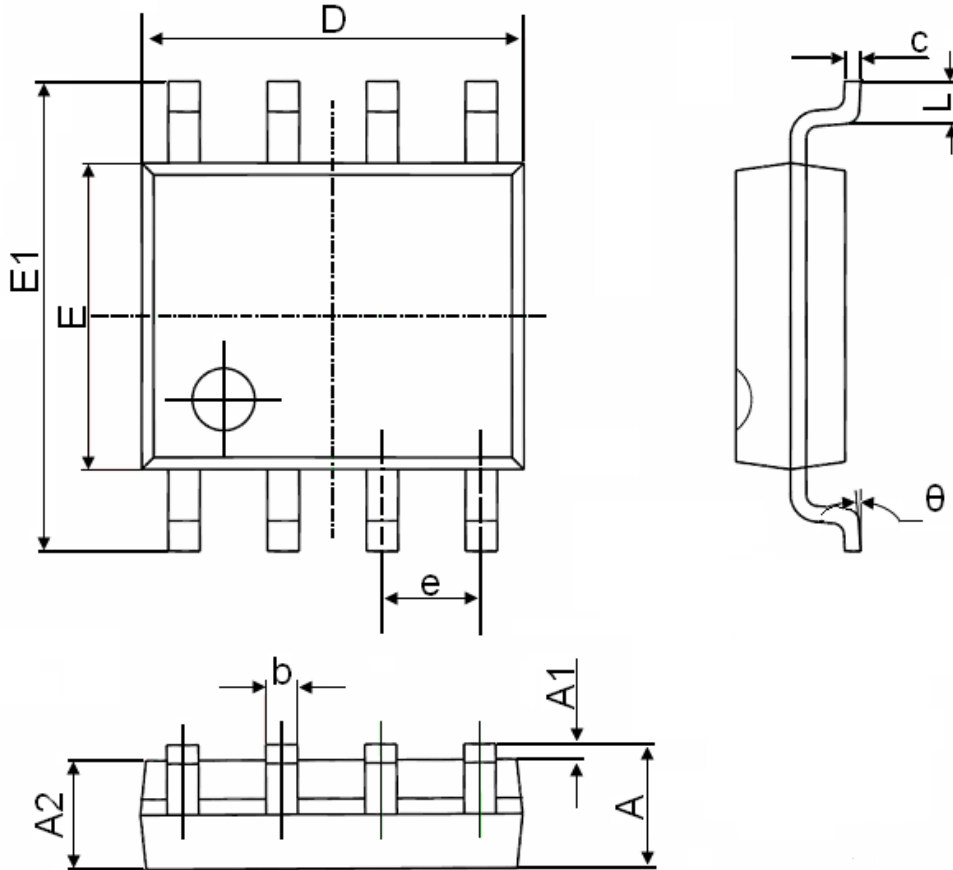


Figure 11: Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°