

Single N-channel MOSFET

ELM59498A-S

<http://www.elm-tech.com>

■General description

ELM59498A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds}=100V$
- $I_d=10A$
- $R_{ds(on)} = 135m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 145m\Omega$ ($V_{gs}=4.5V$)

■Maximum absolute ratings

$T_a=25^{\circ}C$. Unless otherwise noted.

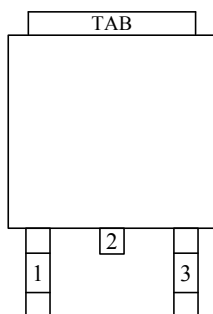
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	100	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j=150^{\circ}C$)	I_d	10	A
		8	
Pulsed drain current	I_{dm}	20	A
Single pulse avalanche current	I_{as}	8	A
Power dissipation	P_d	40	W
		15	
Operating junction temperature	T_j	150	$^{\circ}C$
Storage temperature range	T_{stg}	- 55 to 150	$^{\circ}C$

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		62.5	$^{\circ}C/W$

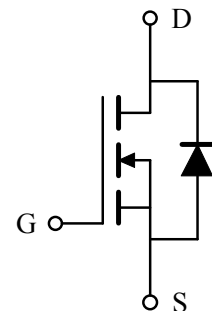
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

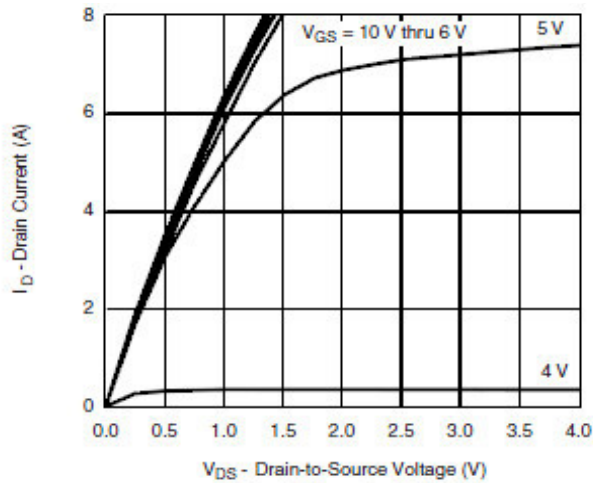
Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V		100			V
Zero gate voltage drain current	Idss	Vds=80V, Vgs=0V				1	μA
			Ta=85°C			5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA		1.0	1.8	2.5	V
On state drain current	Id(on)	Vgs=10V, Vds≥5V		8			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=5A			120	135	mΩ
		Vgs=4.5V, Id=3A			125	145	
Forward transconductance	Gfs	Vds=10V, Id=3A			12		S
Diode forward voltage	Vsd	Is=2A, Vgs=0V			0.8	1.2	V
Max. body-diode continuous current	Is					2	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=50V, f=1MHz			415		pF
Output capacitance	Coss				40		pF
Reverse transfer capacitance	Crss				20		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=10V, Vds=50V Id≐4.5A			10.0	15.0	nC
Gate-source charge	Qgs				1.7		nC
Gate-drain charge	Qgd				2.0		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=50V RL=23.8Ω, Id≐2.1A Rgen=1.0Ω			10	15	ns
Turn-on rise time	tr				10	15	ns
Turn-off delay time	td(off)				12	20	ns
Turn-off fall time	tf				10	15	ns

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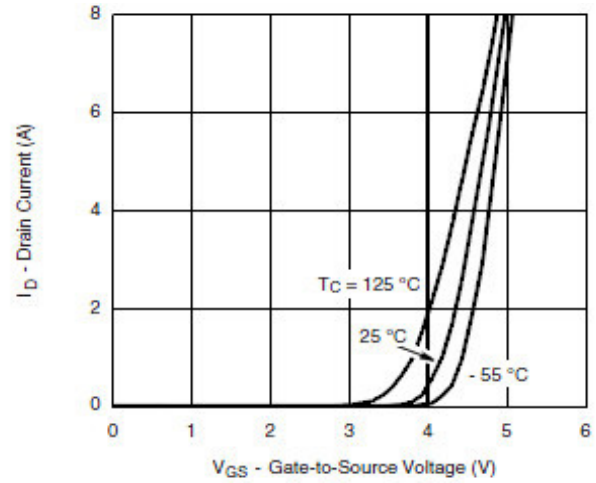
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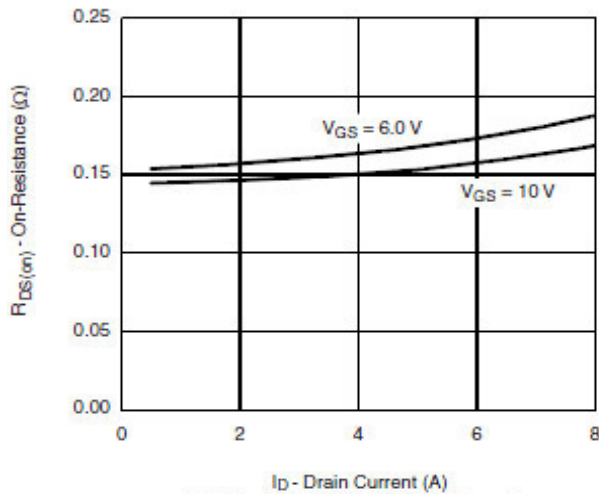
■ Typical electrical and thermal characteristics



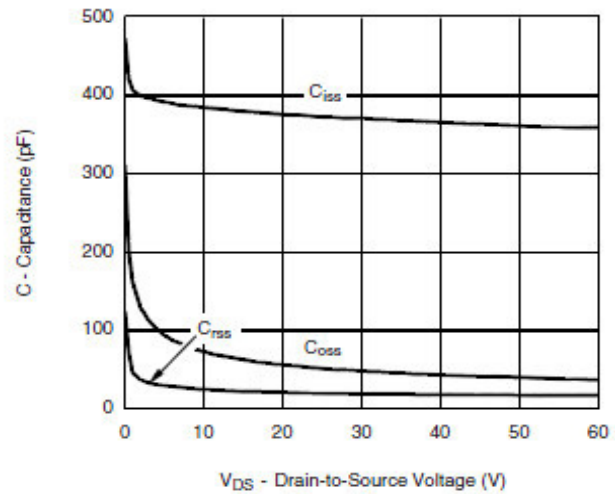
Output Characteristics



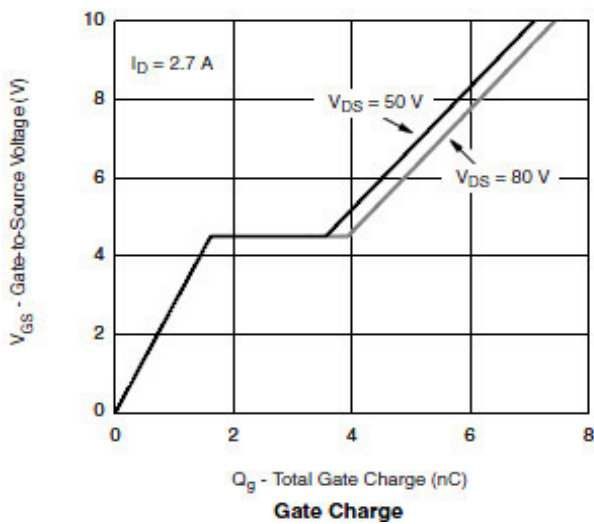
Transfer Characteristics



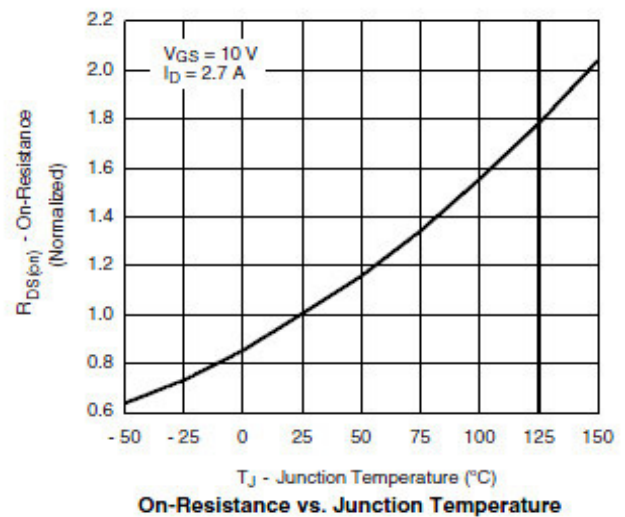
On-Resistance vs. Drain Current



Capacitance



Gate Charge

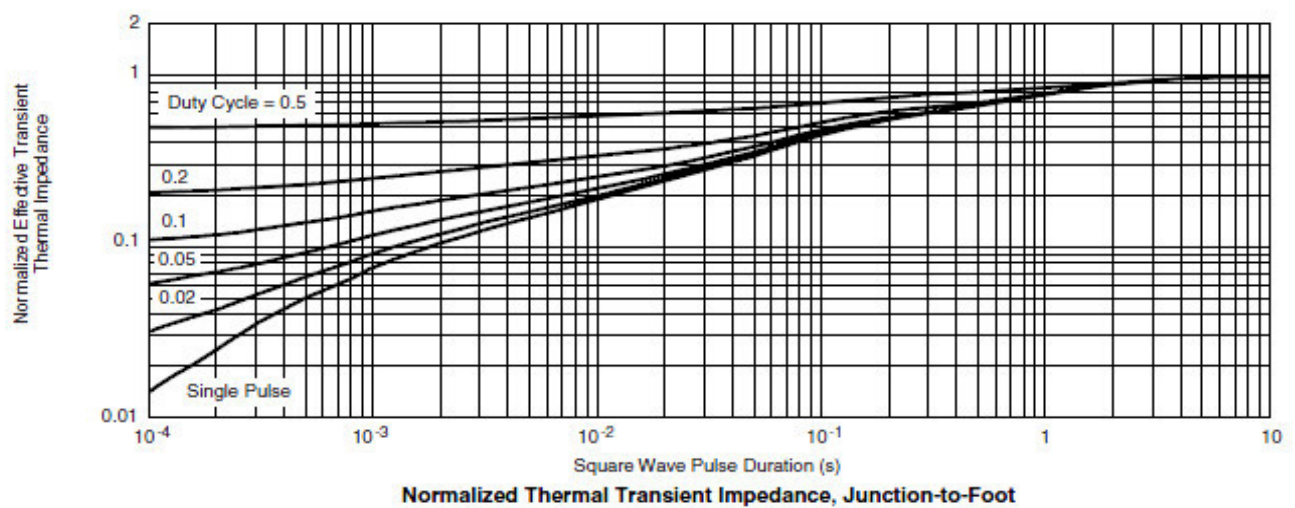
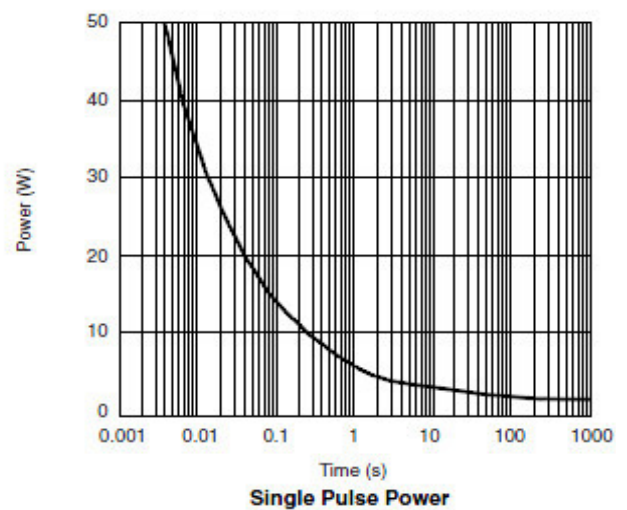
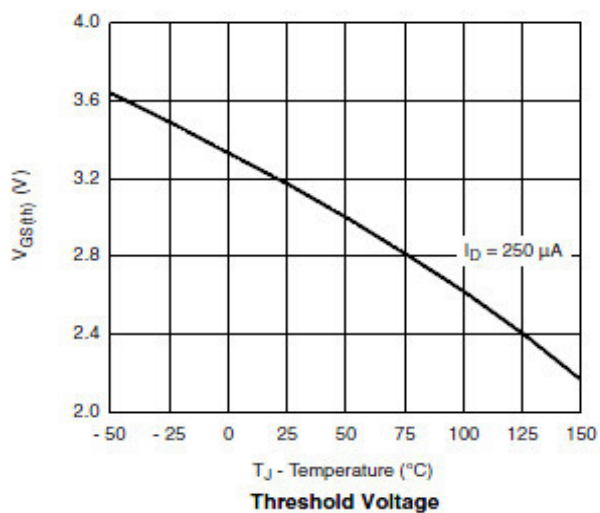
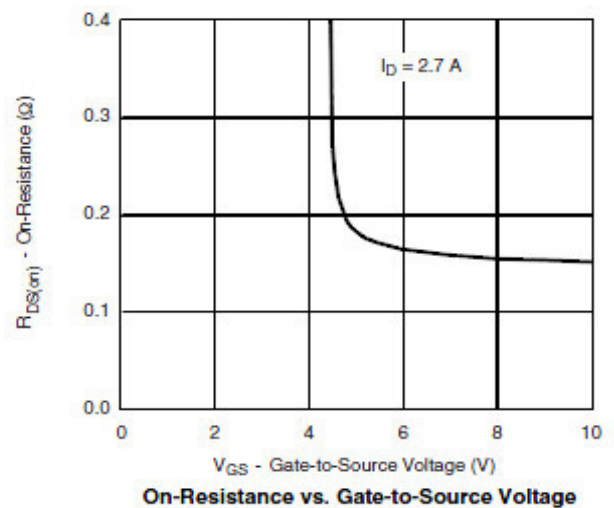
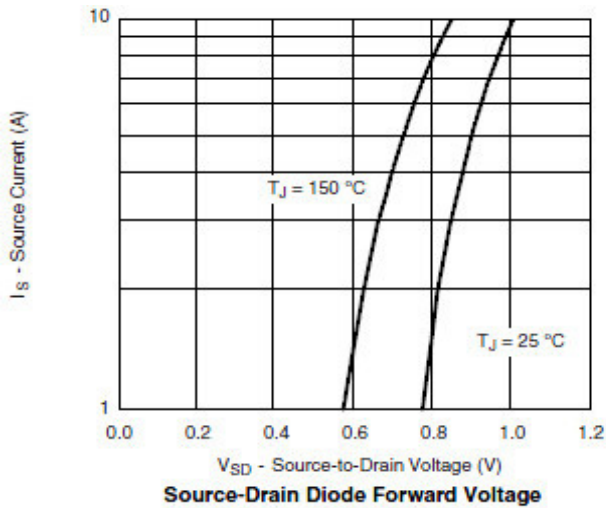


On-Resistance vs. Junction Temperature

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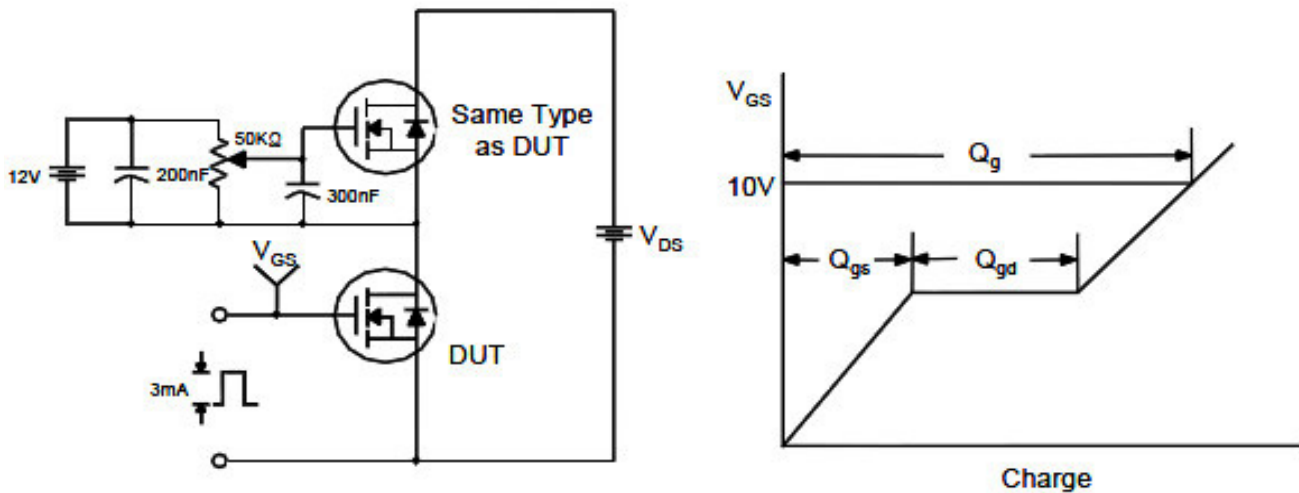
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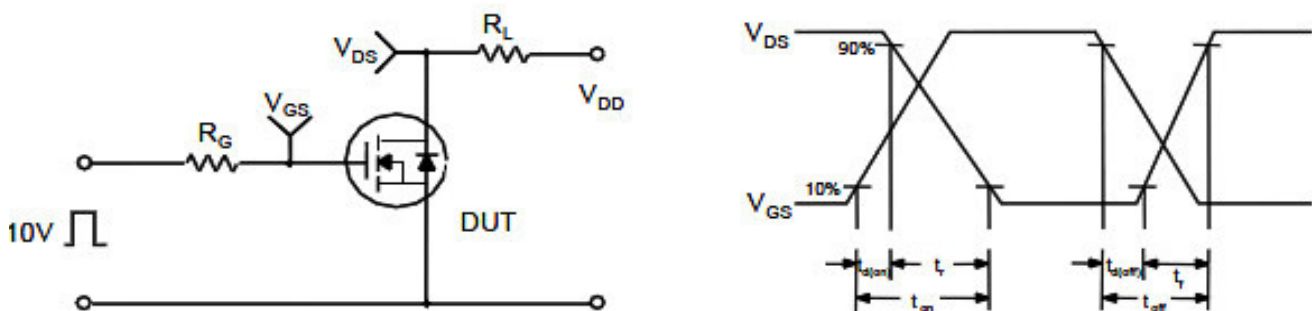
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

