

# Dual N-channel MOSFET (common drain)

## ELM58822SA-S

### ■ General description

ELM58822SA-S uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

### ■ Features

- $V_{ds}=20V$
- $I_d=6.5A$
- $R_{ds(on)} = 32m\Omega$  ( $V_{gs}=4.5V$ )
- $R_{ds(on)} = 35m\Omega$  ( $V_{gs}=2.5V$ )

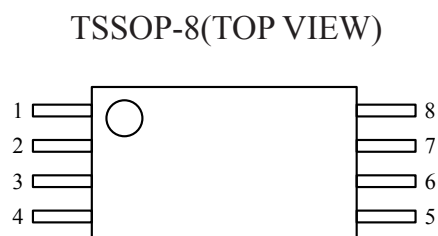
### ■ Maximum absolute ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	$V_{ds}$	20	V
Gate-source voltage	$V_{gs}$	$\pm 12$	V
Continuous drain current	$I_d$	$T_a=25^\circ C$	6.5
		$T_a=70^\circ C$	4.8
Pulsed drain current	$I_{dm}$	20	A
Power dissipation	$P_d$	$T_a=25^\circ C$	2.8
		$T_a=70^\circ C$	1.8
Junction and storage temperature range	$T_j, T_{stg}$	-55 to 150	$^\circ C$

### ■ Thermal characteristics

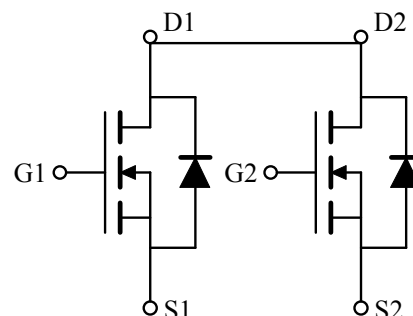
Parameter	Symbol	Typ.	Max.	Unit
Maximum junction-to-ambient	$R_{\theta ja}$		62.5	$^\circ C/W$

### ■ Pin configuration



Pin No.	Pin name
1	DRAIN1/DRAIN2
2	SOURCE1
3	SOURCE1
4	GATE1
5	GATE2
6	SOURCE2
7	SOURCE2
8	DRAIN1/DRAIN2

### ■ Circuit



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### ■Electrical characteristics

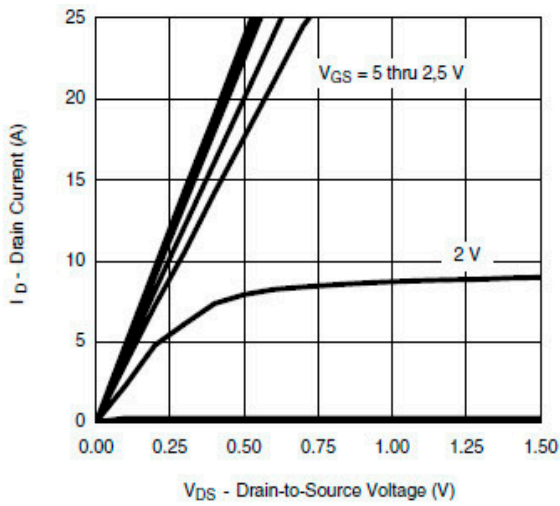
Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	20			V
Zero gate voltage drain current	Idss	Vds=16V, Vgs=0V			1	μA
		Vds=16V, Vgs=0V, Tj=85°C			30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±8V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.5		1.0	V
On state drain current	Id(on)	Vgs=4.5V, Vds=5V	10			A
Static drain-source on-resistance	Rds(on)	Vgs=4.5V, Id=6.5A		28	32	mΩ
		Vgs=2.5V, Id=4.8A		32	35	
Forward transconductance	Gfs	Vds=5V, Id=7A		25		S
Diode forward voltage	Vsd	Is=1.7A, Vgs=0V			1.3	V
Max.body-diode continuous current	Is				1.5	A
<b>DYNAMIC PARAMETERS</b>						
Input capacitance	Ciss	Vgs=0V, Vds=20V, f=1MHz		700		pF
Output capacitance	Coss			75		pF
Reverse transfer capacitance	Crss			45		pF
<b>SWITCHING PARAMETERS</b>						
Total gate charge	Qg	Vgs=4.5V, Vds=10V, Id=7A		650		nC
Gate-source charge	Qgs			200		nC
Gate-drain charge	Qgd			180		nC
Turn-on delay time	td(on)	Vgs=4.5V, Vds=10V RL=1.4Ω, Id=1A Rgen=3Ω		8	12	ns
Turn-on rise time	tr			12	20	ns
Turn-off delay time	td(off)			32	40	ns
Turn-off fall time	tf			10	15	ns

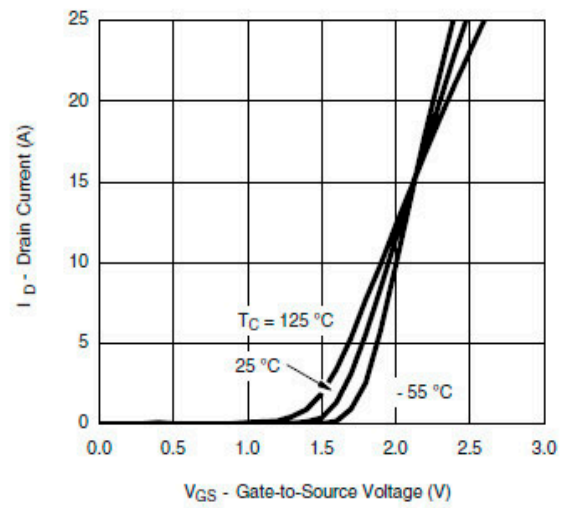
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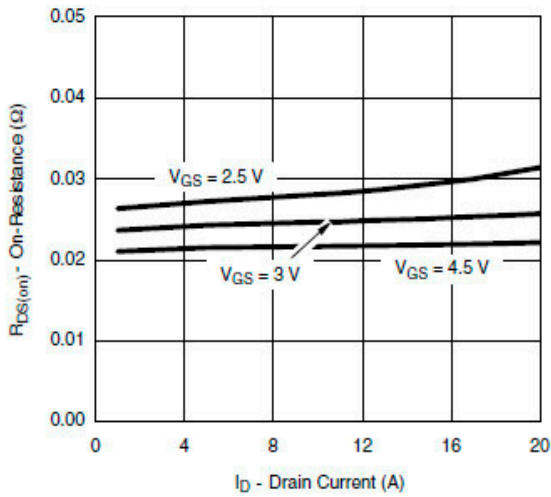
### Typical electrical and thermal characteristics



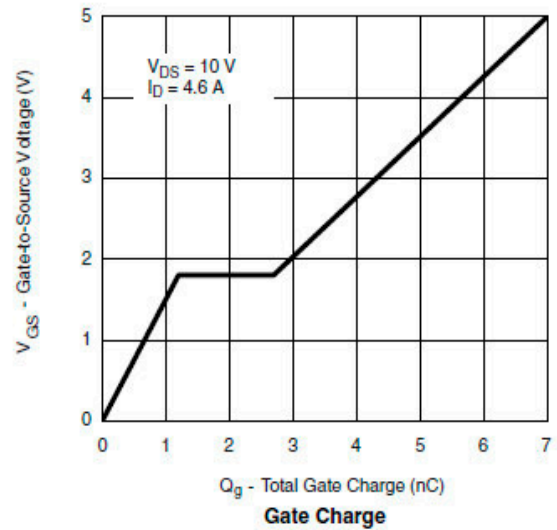
Output Characteristics



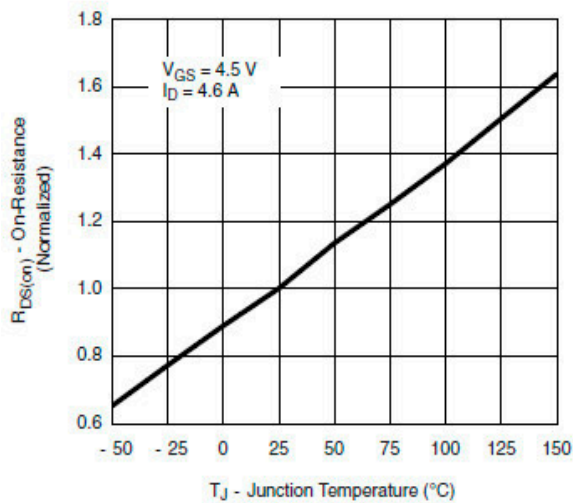
Transfer Characteristics



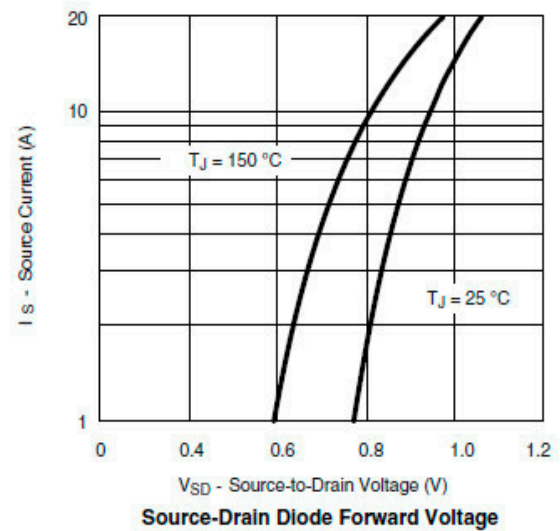
On-Resistance vs. Drain Current



Gate Charge



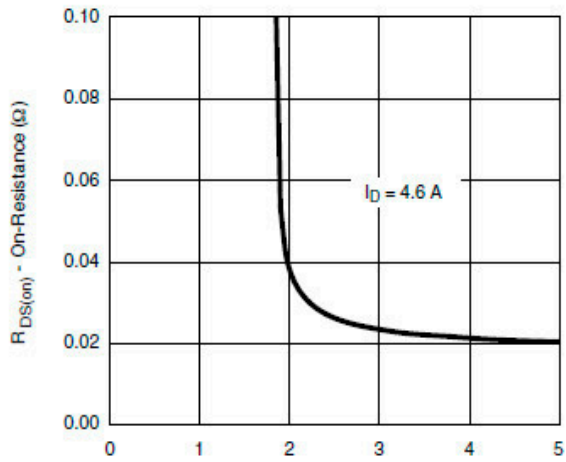
On-Resistance vs. Junction Temperature



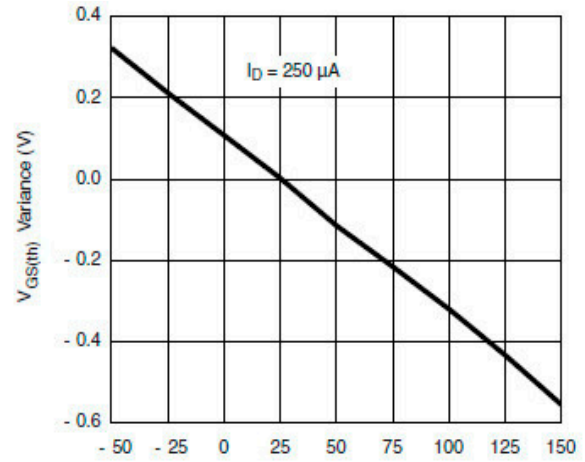
Source-Drain Diode Forward Voltage

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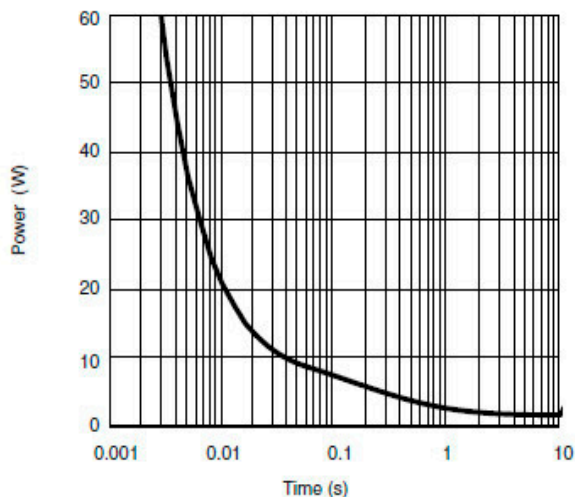
## ELM58822SA-S



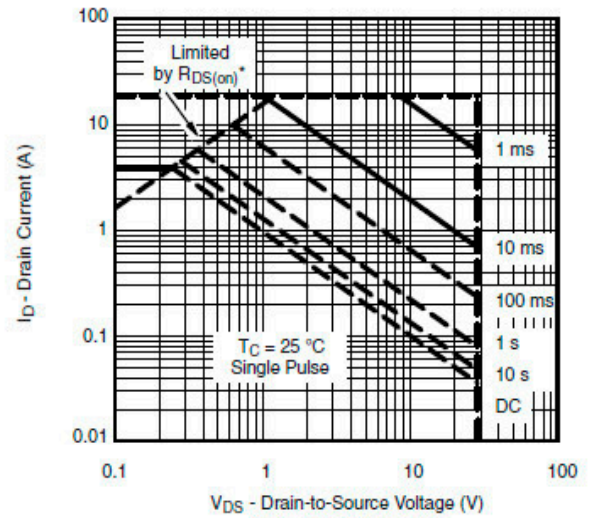
**On-Resistance vs. Gate-to-Source Voltage**



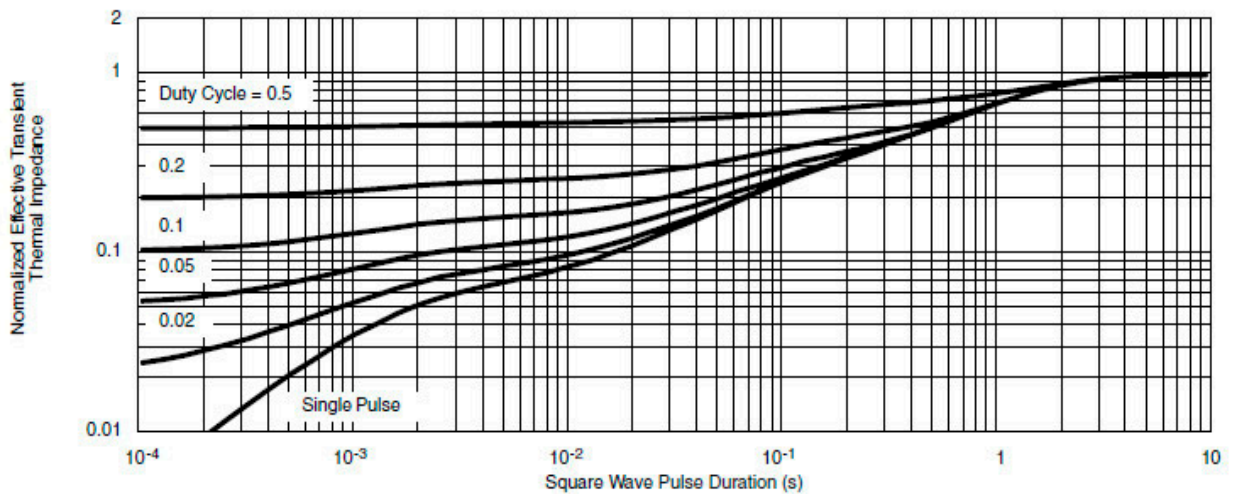
**Threshold Voltage**



**Single Pulse Power**



**Safe Operating Area**



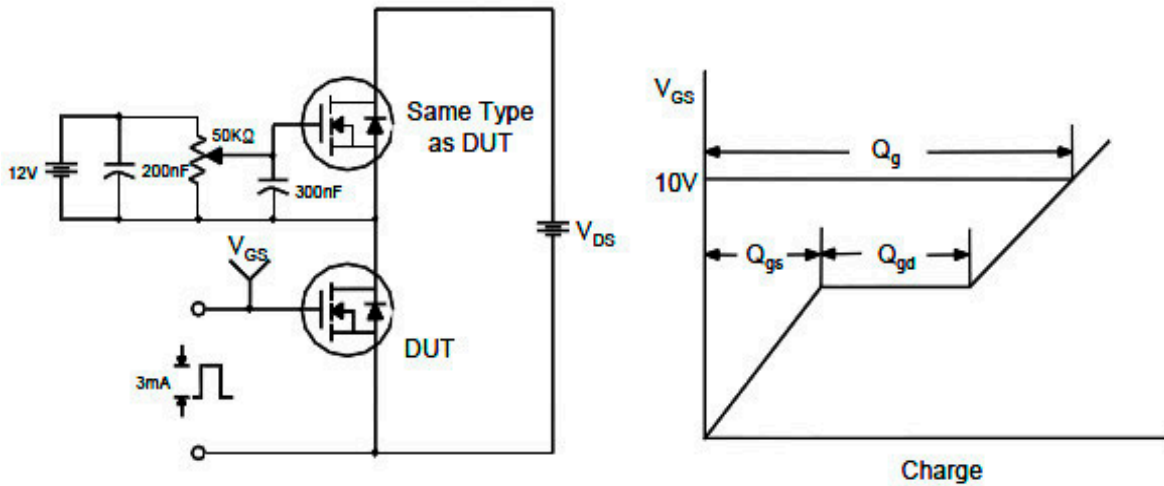
**Normalized Thermal Transient Impedance, Junction-to-Foot**

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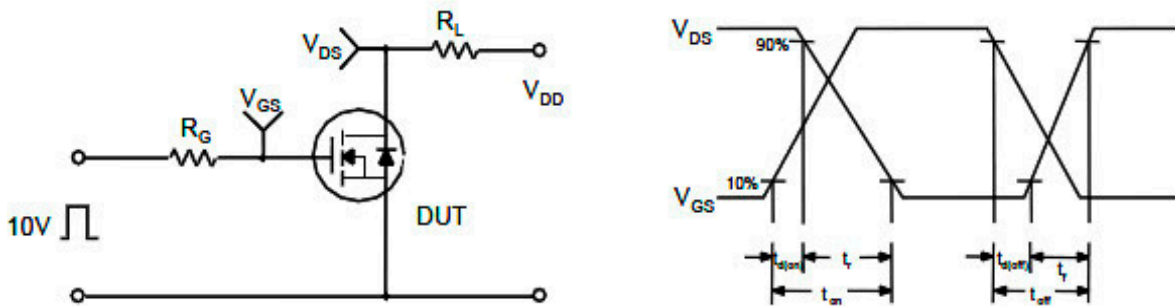
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## ■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

