

Dual N-channel MOSFET

ELM56800EA-S

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

■ General description

ELM56800EA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds}=30V$
- $I_d=3.6A$
- $R_{ds(on)} = 70m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 78m\Omega$ ($V_{gs}=4.5V$)
- $R_{ds(on)} = 95m\Omega$ ($V_{gs}=2.5V$)

■ Maximum absolute ratings

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

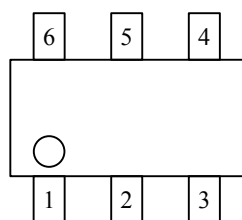
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	30	V
Gate-source voltage	V_{gs}	± 12	V
Continuous drain current($T_j=150^\circ C$)	I_d	$T_a=25^\circ C$	3.6
		$T_a=70^\circ C$	2.2
Pulsed drain current	I_{dm}	20	A
Power dissipation	P_d	$T_c=25^\circ C$	2.0
		$T_c=70^\circ C$	1.3
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$

■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Thermal resistance junction-to-ambient	$R_{\theta ja}$		120	$^\circ C/W$	

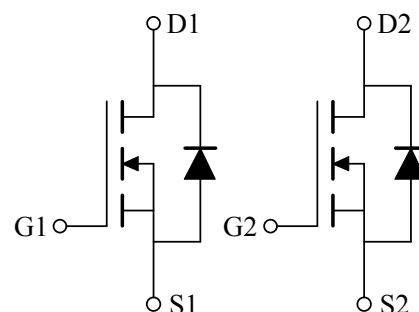
■ Pin configuration

SOT-26(TOP VIEW)



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

■ Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

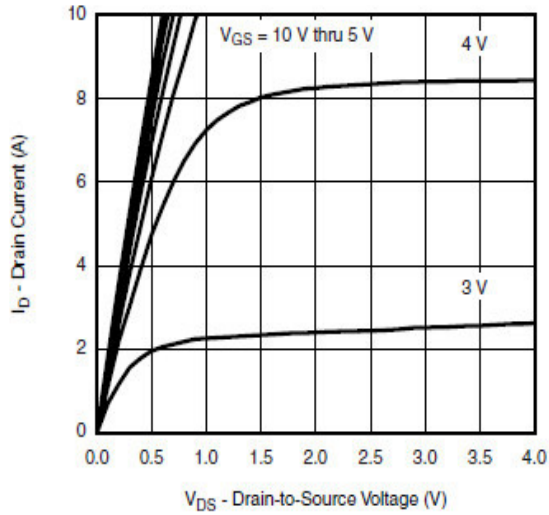
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	30			V
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V			1	μA
		Vds=24V, Vgs=0V, Ta=85°C			30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.4		1.2	V
On state drain current	Id(on)	Vgs=4.5V, Vds=5V	30			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=3.6A		56	70	mΩ
		Vgs=4.5V, Id=3.0A		62	78	
		Vgs=2.5V, Id=2.2A		78	95	
Forward transconductance	Gfs	Vds=10V, Id=1.6A		20		S
Diode forward voltage	Vsd	Is=1.7A, Vgs=0V		0.8	1.2	V
Max. body-diode continuous current	Is				1.7	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		280		pF
Output capacitance	Coss			40		pF
Reverse transfer capacitance	Crss			20		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=4.5V, Vds=15V, Id=3.6A		2.3	3.0	nC
Gate-source charge	Qgs			1.0		nC
Gate-drain charge	Qgd			0.6		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id=1A RL=15Ω, Rgen=6Ω		10	15	ns
Turn-on rise time	tr			12	20	ns
Turn-off delay time	td(off)			15	25	ns
Turn-off fall time	tf			10	15	ns

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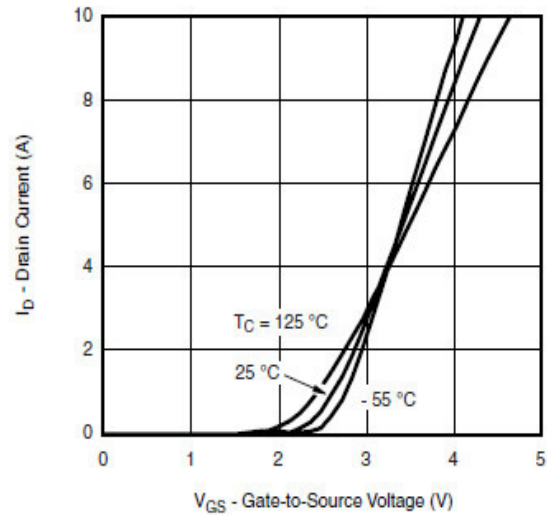
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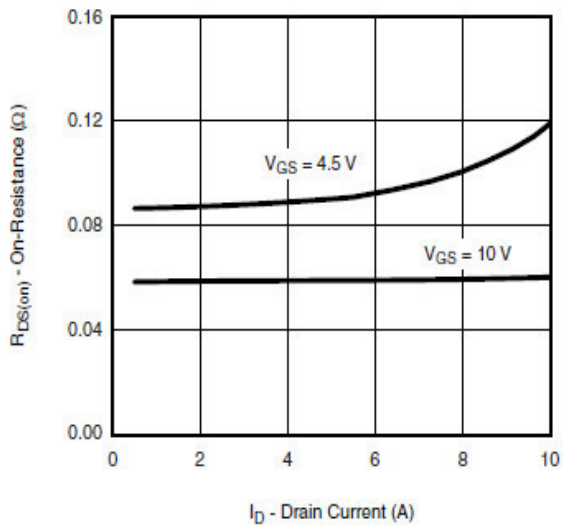
■ Typical electrical and thermal characteristics



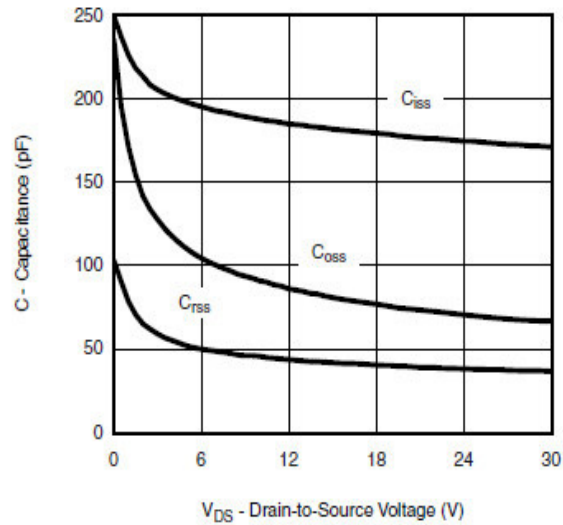
Output Characteristics



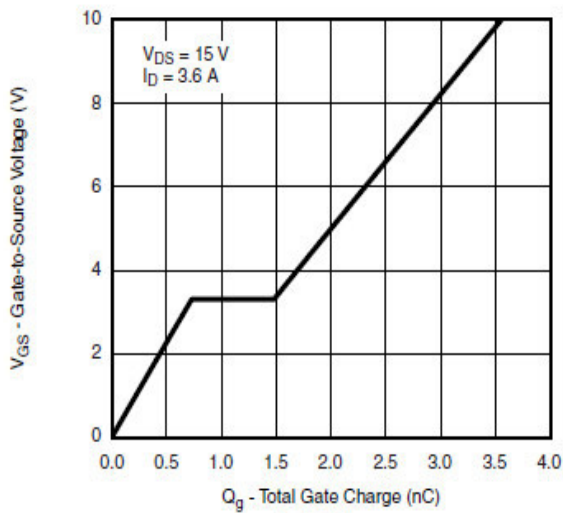
Transfer Characteristics



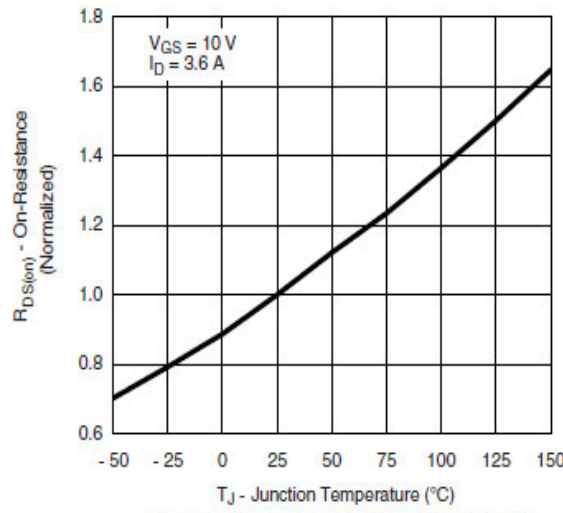
On-Resistance vs. Drain Current



Capacitance



Gate Charge

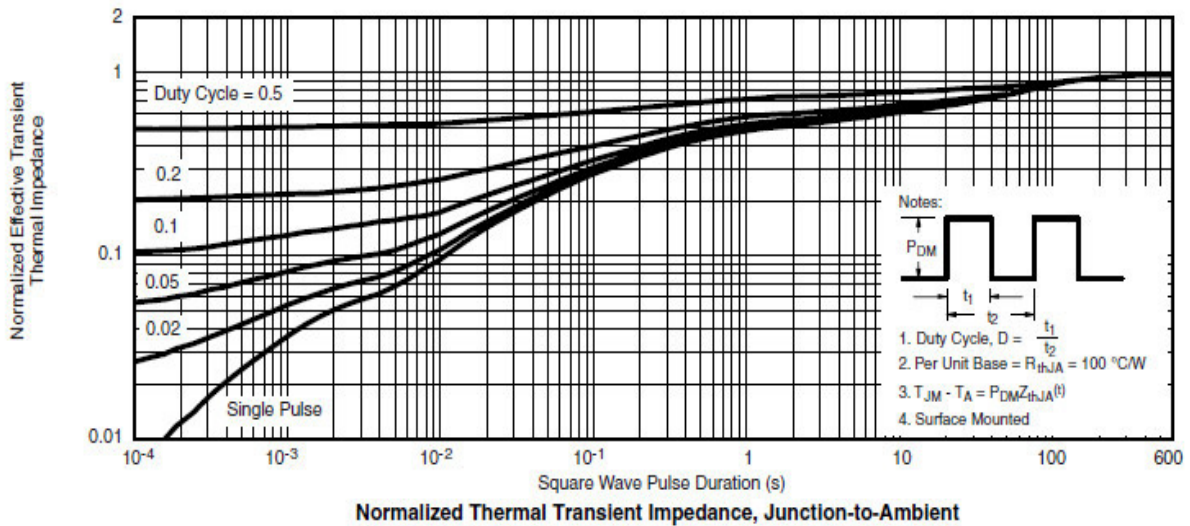
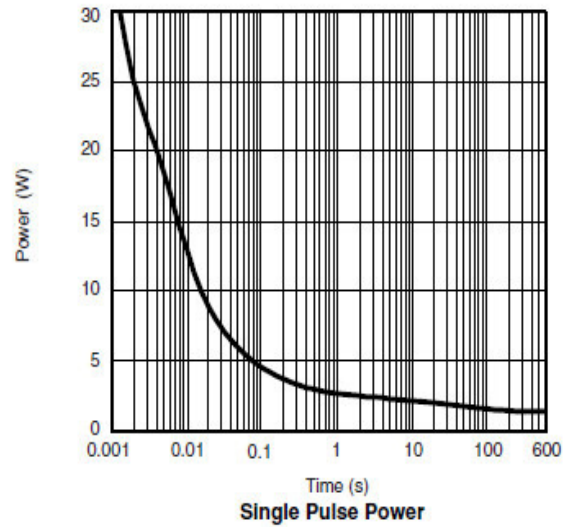
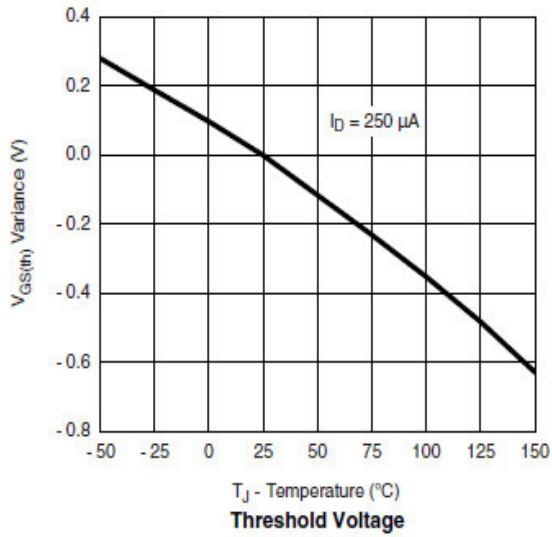
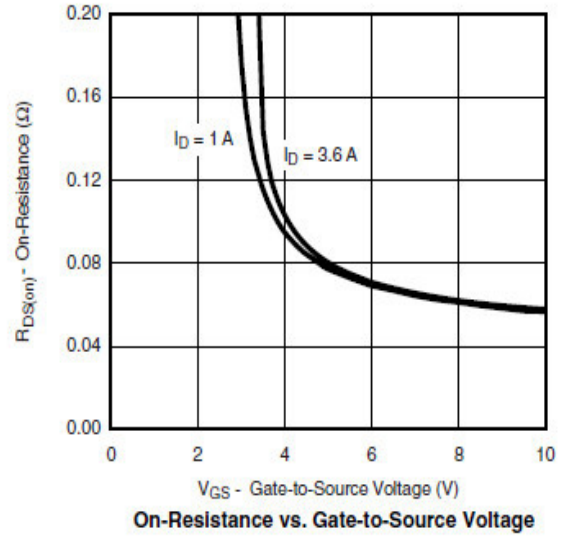
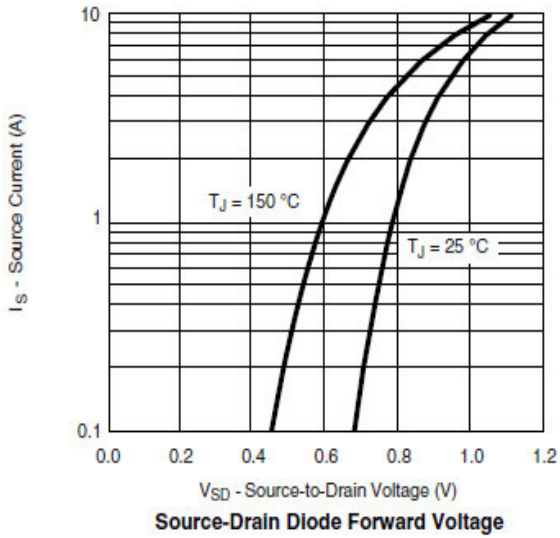


On-Resistance vs. Junction Temperature

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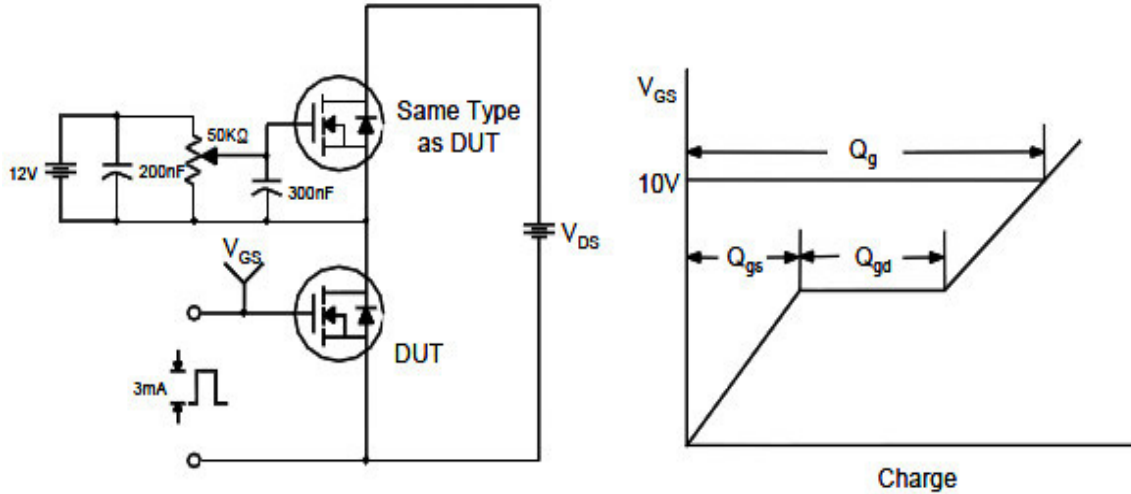
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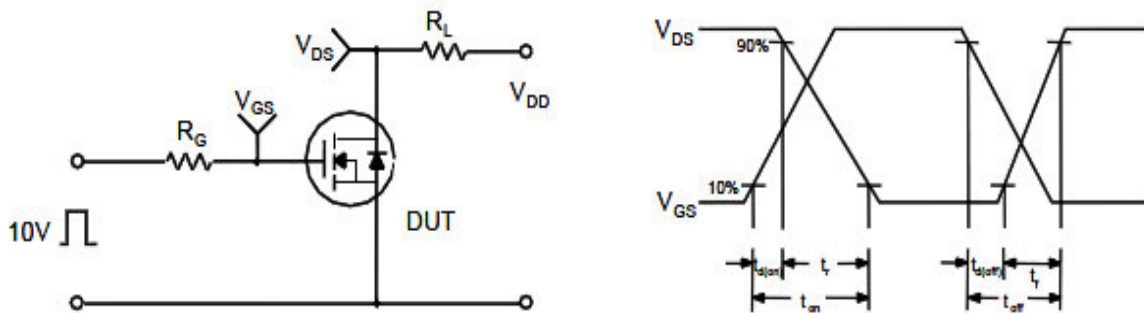
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

