

Single N-channel MOSFET

ELM51330SA-S

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

■ General description

ELM51330SA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage. ESD protection is included.

■ Features

- $V_{ds}=60V$
- $I_d=0.115A$
- $R_{ds(on)} = 7.5\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 7.5\Omega$ ($V_{gs}=5V$)
- ESD Rating : 1KV

■ Maximum absolute ratings

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

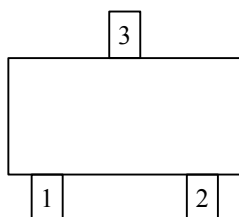
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j=150^\circ C$)	I_d	$T_a=25^\circ C$	0.115
		$T_a=70^\circ C$	0.075
Pulsed drain current	I_{dm}	0.8	A
Power dissipation	P_d	225	mW
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	- 55 to 150	$^\circ C$

■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		417	$^\circ C/W$

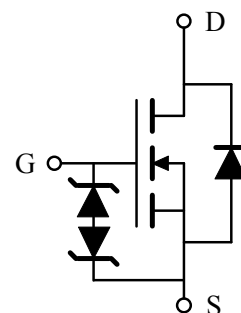
■ Pin configuration

SC-70(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■ 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	60			V
Zero gate voltage drain current	Idss	Vds=60V, Vgs=0V			1	μA
					10	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			3	μA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0	1.6	2.0	V
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=0.50A		1.4	7.5	Ω
		Vgs=5V, Id=0.05A		1.8	7.5	
Forward transconductance	Gfs	Vds=10V, Id=0.2A	80			mS
Diode forward voltage	Vsd	Is=0.115A, Vgs=0V			1.5	V
Max. body-diode continuous current	Is				0.115	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=25V, f=1MHz		17	50	pF
Output capacitance	Coss			10	25	pF
Reverse transfer capacitance	Crss			3	5	pF
SWITCHING PARAMETERS						
Turn-on delay time	td(on)	Vgs=10V, Vds=25V		7	20	ns
Turn-off delay time	td(off)	RL=50Ω, Id=0.5A, Rgen=25Ω		11	40	ns

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■ Typical characteristics

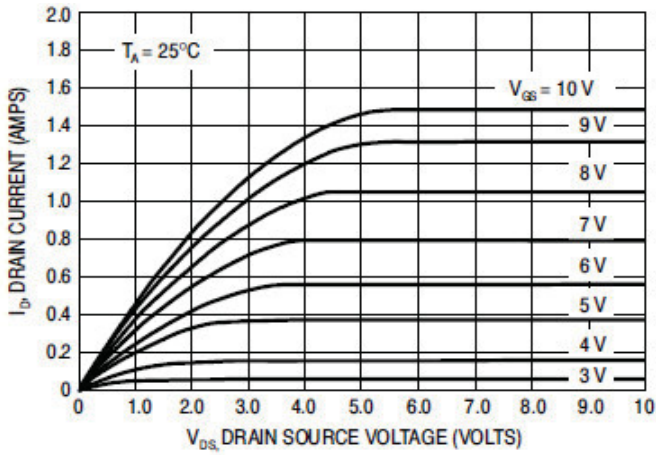


Figure 1. Ohmic Region

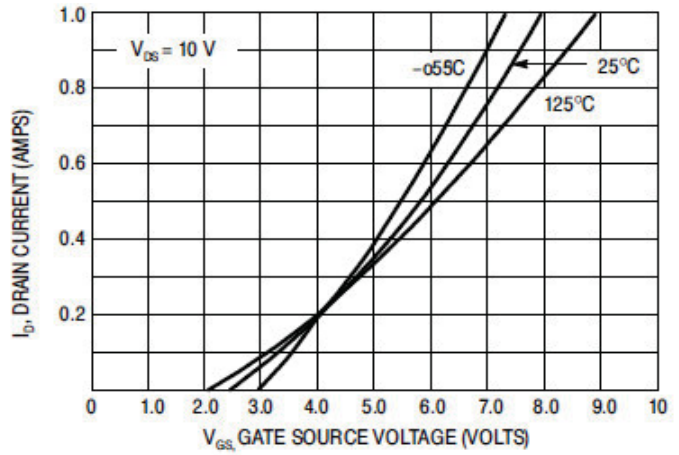


Figure 2. Transfer Characteristics

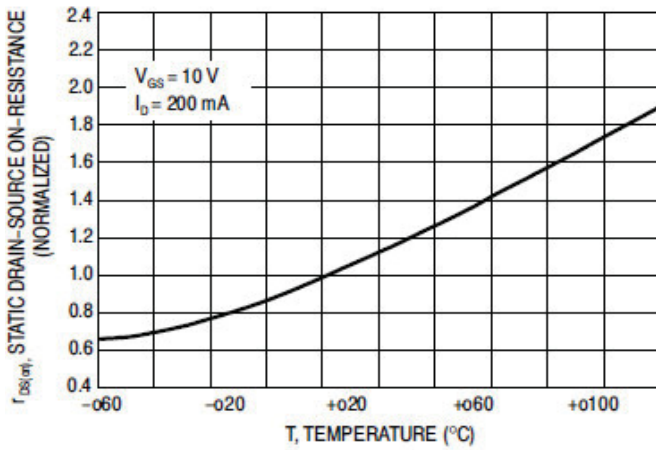


Figure 3. Temperature versus Static Drain-Source On-Resistance

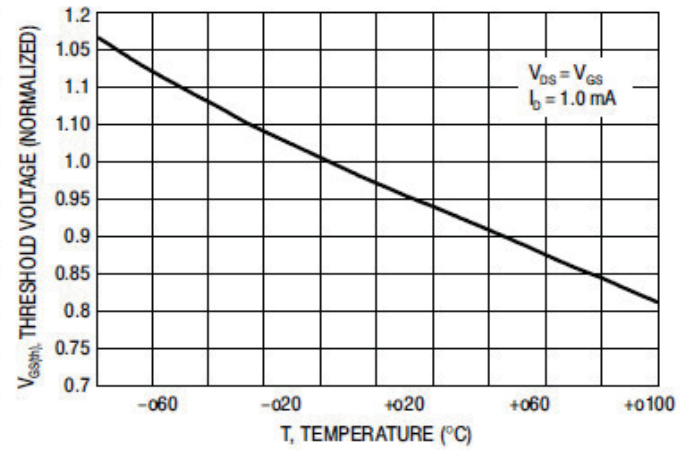


Figure 4. Temperature versus Gate Threshold Voltage