

Single P-channel MOSFET

ELM52379ASA-S

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

■ General description

ELM52379ASA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds} = -60V$
- $I_d = -4.2A$
- $R_{ds(on)} = 80m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 94m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

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

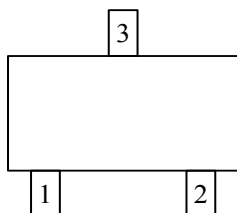
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current ($T_j = 150^\circ C$)	I_d	$T_a = 25^\circ C$	-4.2
		$T_a = 70^\circ C$	-3.6
Pulsed drain current	I_{dm}	-15	A
Continuous source current (Diode conduction)	I_s	-1.5	A
Power dissipation	P_d	$T_c = 25^\circ C$	1.25
		$T_c = 70^\circ C$	0.80
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	$R_{\theta ja}$		120	$^\circ C/W$

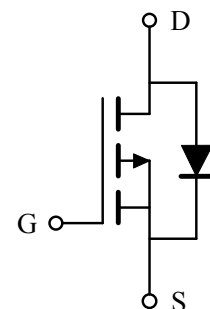
■ Pin configuration

SOT-23 (TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■ Circuit



Single P-channel MOSFET

ELM52379ASA-S

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

■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

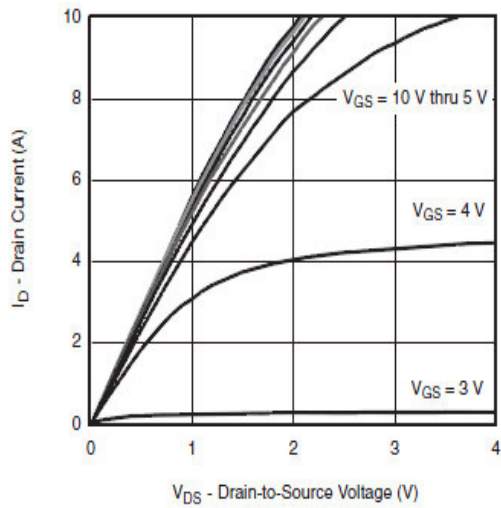
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-60			V
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V			-1	μA
		Vds=-48V, Vgs=0V, Ta=85°C			-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.0	V
On state drain current	Id(on)	Vgs=-10V, Vds≤-5V	-6			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-4.2A		72	80	mΩ
		Vgs=-4.5V, Id=-3.6A		84	94	
Forward transconductance	Gfs	Vds=-15V, Id=-2.2A		5		S
Diode forward voltage	Vsd	Is=-1.5A, Vgs=0V		-0.75	-1.30	V
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-30V, f=1MHz		410		pF
Output capacitance	Coss			45		pF
Reverse transfer capacitance	Crss			20		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-30V Id≅-2.2A		5.0	10.0	nC
Gate-source charge	Qgs			1.5		nC
Gate-drain charge	Qgd			2.5		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-30V RL=16.7Ω, Id≅-1.8A, Rgen=1Ω		5	10	ns
Turn-on rise time	tr			15	25	ns
Turn-off delay time	td(off)			20	35	ns
Turn-off fall time	tf			10	20	ns

Single P-channel MOSFET

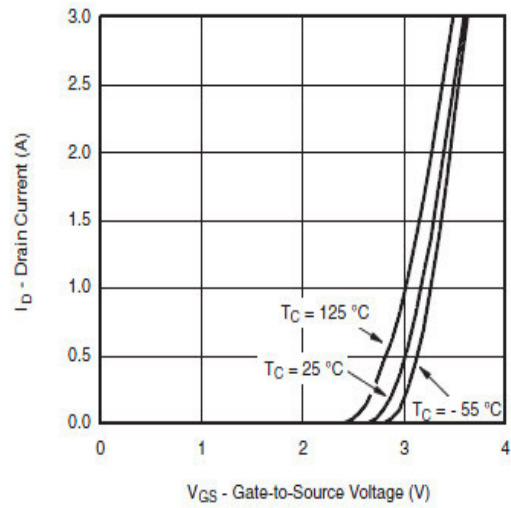
ELM52379ASA-S

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

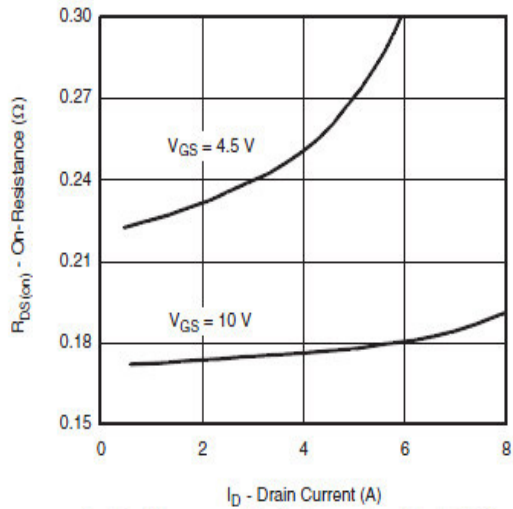
Typical electrical and thermal characteristics



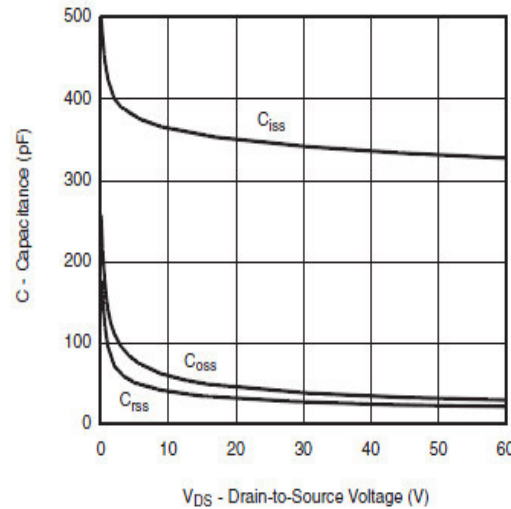
Output Characteristics



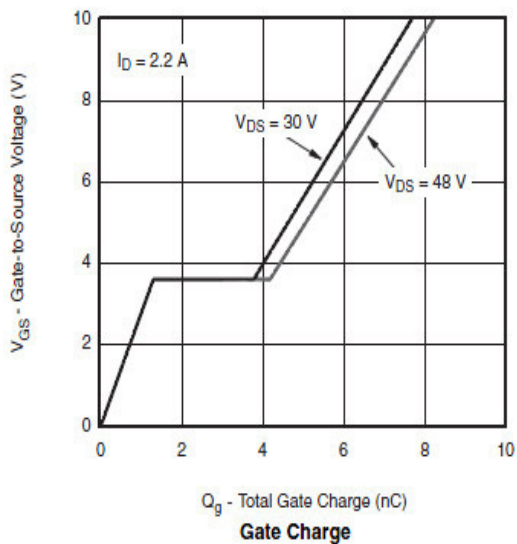
Transfer Characteristics



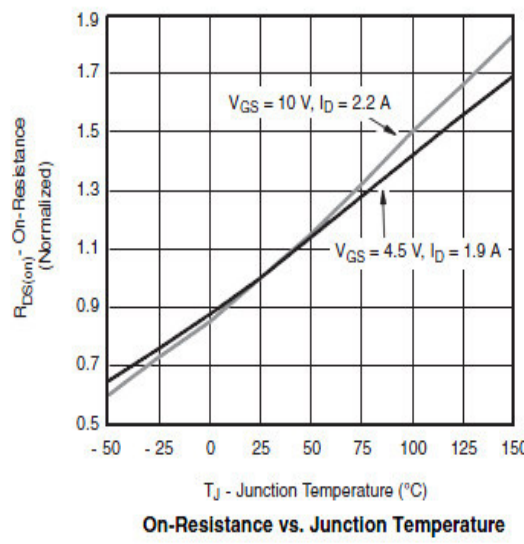
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

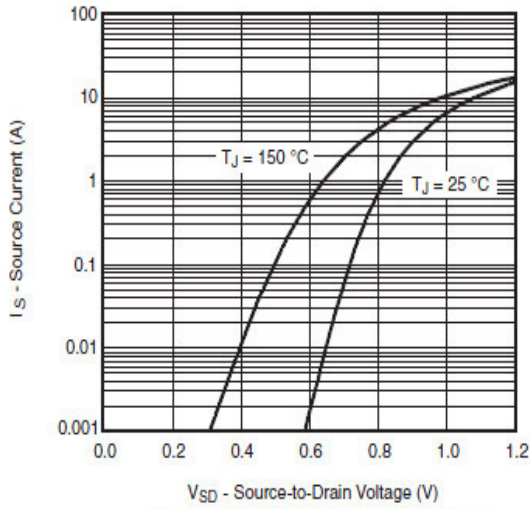


On-Resistance vs. Junction Temperature

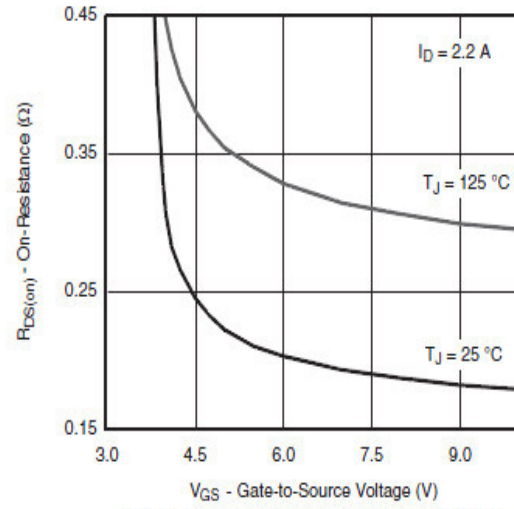
Single P-channel MOSFET

ELM52379ASA-S

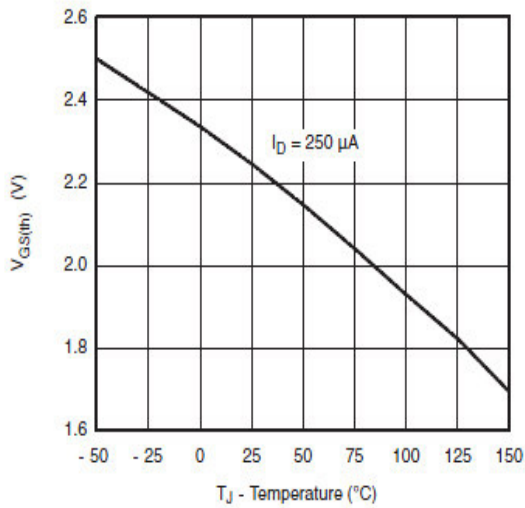
<http://www.elm-tech.com>



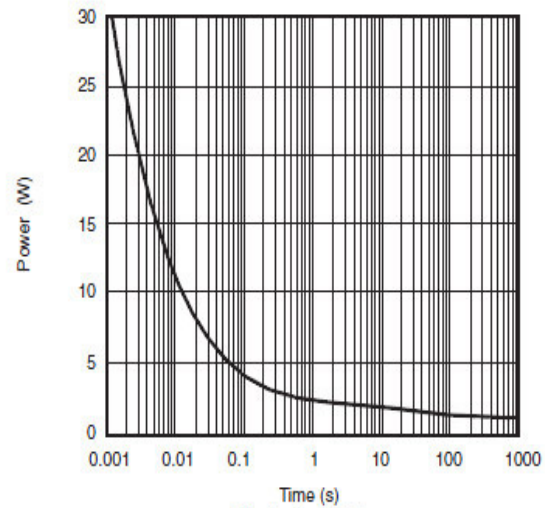
Source-Drain Diode Forward Voltage



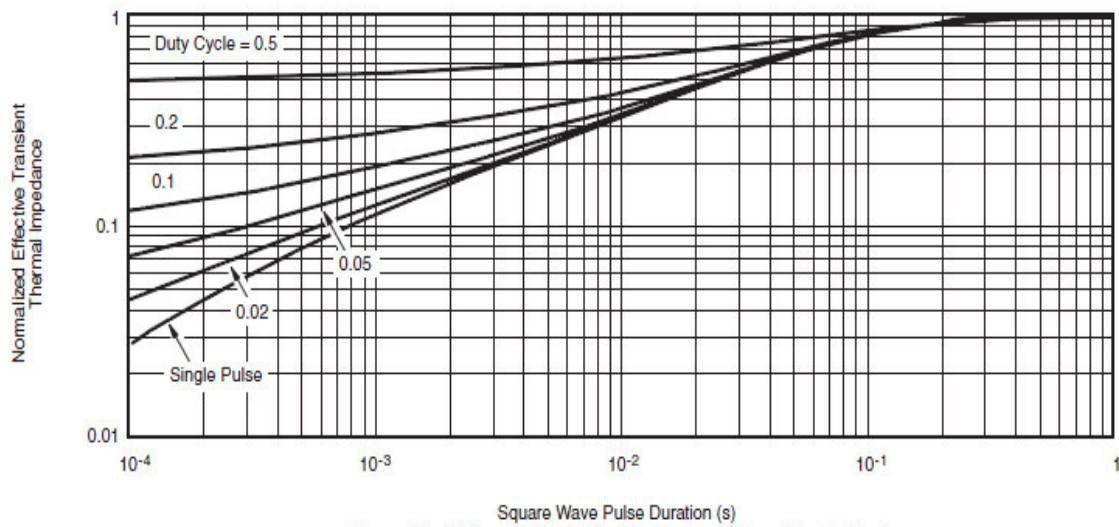
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Foot

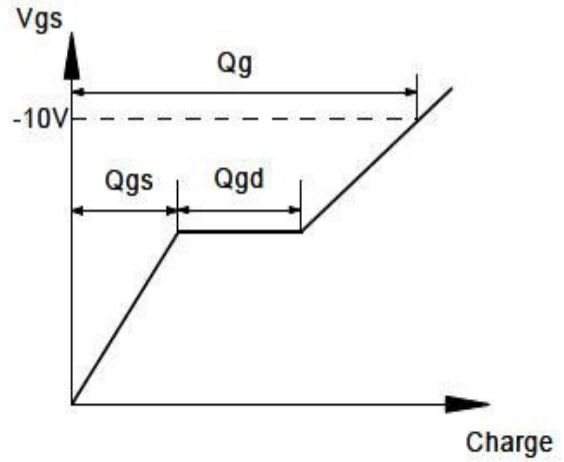
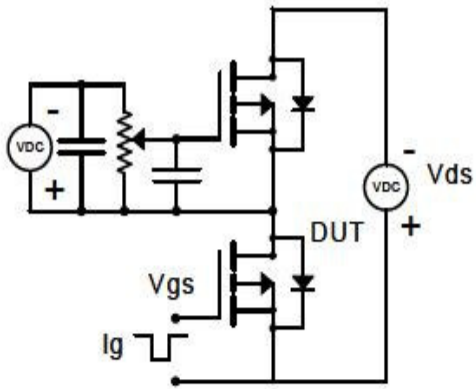
Single P-channel MOSFET

ELM52379ASA-S

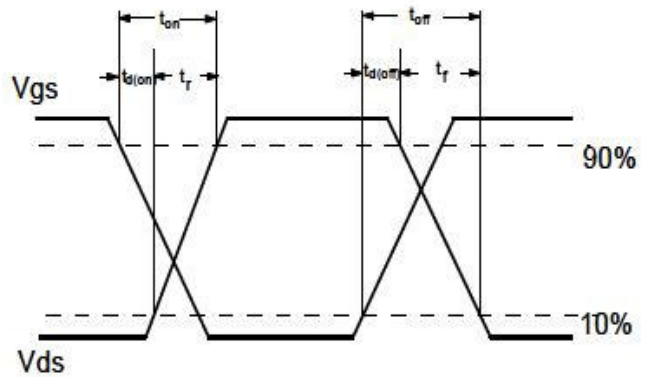
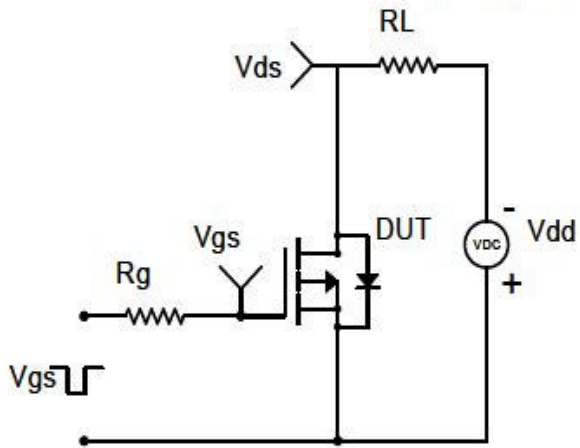
<http://www.elm-tech.com>

■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

