Dual P-channel MOSFET

ELM51023EA-S

■General description

ELM51023EA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and operation with gate voltages as low as 1.8V and internal ESD protection.

■Features

- Vds=-20V
- Id=-0.45A
- Rds(on) = 800mΩ (Vgs=-4.5V)
- Rds(on) = 950mΩ (Vgs=-2.5V)
- Rds(on) = 1250mΩ (Vgs=-1.8V)
- ESD protected

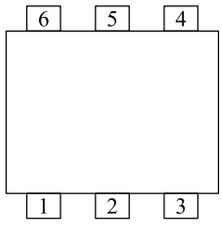
■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	-20	V
Gate-source voltage		Vgs	±12	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	-0.45	A
	Ta=70°C		-0.25	
Pulsed drain current		Idm	-1.0	A
Power dissipation	Tc=25°C	Pd	0.27	W
	Tc=70°C		0.16	
Junction and storage temperature range		Tj, Tstg	-55 to 150	°C

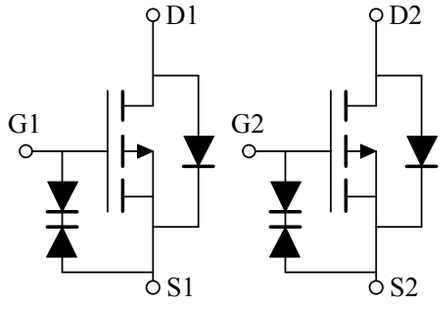
■Pin configuration

SOT-563(TOP VIEW)



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

■Circuit

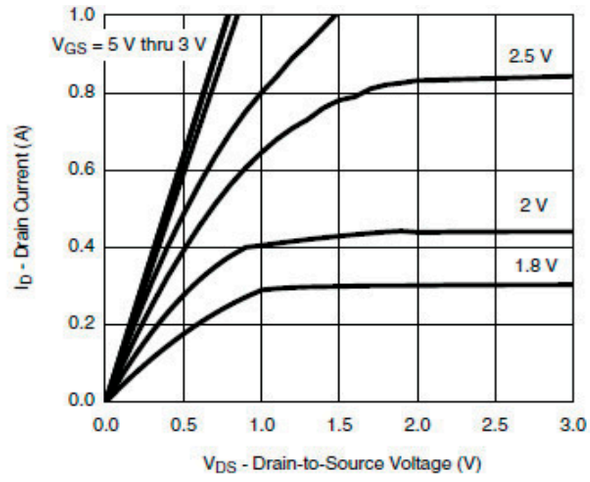


■Electrical characteristics

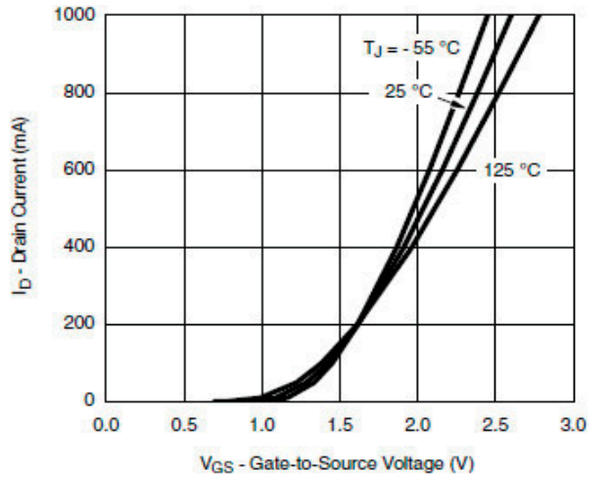
Ta=25°C. Unless otherwise noted.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-20			V
Zero gate voltage drain current	Idss	Vds=-20V, Vgs=0V			-5	μA
		Vds=-20V, Vgs=0V, Ta=85°C			-10	μA
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±1	mA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-0.4		-1.0	V
On state drain current	Id(on)	Vgs=-4.5V, Vds≥-5V	-0.7			A
Static drain-source on-resistance	Rds(on)	Vgs=-4.5V, Id=-0.6A		550	800	mΩ
		Vgs=-2.5V, Id=-0.5A		700	950	mΩ
		Vgs=-1.8V, Id=-0.4A		1000	1250	mΩ
Forward transconductance	Gfs	Vds=-10V, Id=-0.4A		1		S
Diode forward voltage	Vsd	Is=-0.15A, Vgs=0V		-0.65	-1.20	V
Max. body-diode continuous current	Is				-0.3	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-10V, f=1MHz		70	100	pF
Output capacitance	Coss			20		pF
Reverse transfer capacitance	Crss			10		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-10V, Id≡-0.25A		1.0	1.3	nC
Gate-source charge	Qgs			0.1		nC
Gate-drain charge	Qgd			0.3		nC
Turn-on delay time	td(on)	Vgs=-4.5V, Vds=-10V, RL=30Ω, Id≡-0.2A, Rgen=10Ω		10	15	ns
Turn-on rise time	tr			10	15	ns
Turn-off delay time	td(off)			40	60	ns
Turn-off fall time	tf			30	50	ns

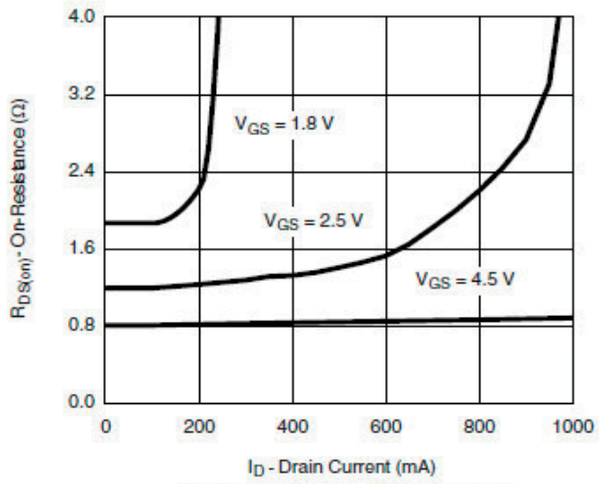
■Typical electrical and thermal characteristics



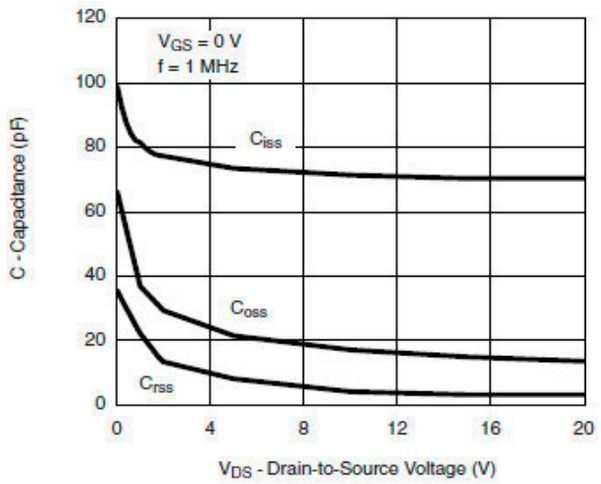
Output Characteristics



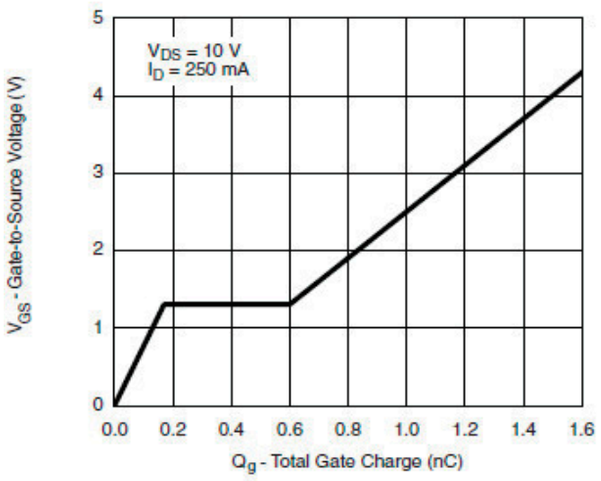
Transfer Characteristics



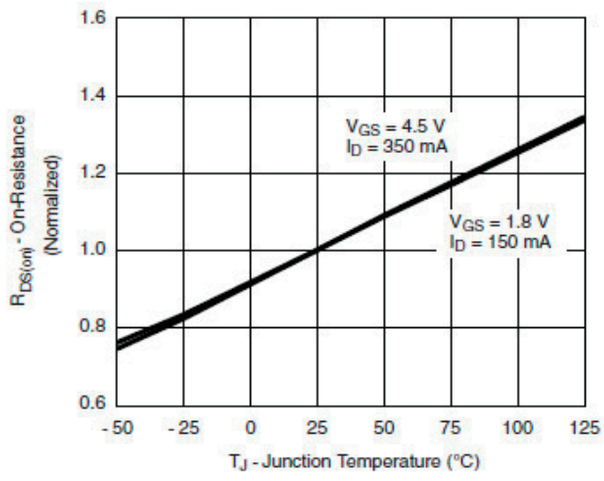
On-Resistance vs. Drain Current



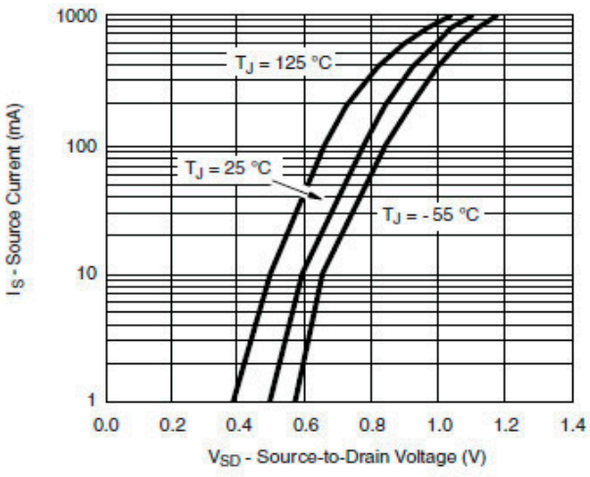
Capacitance



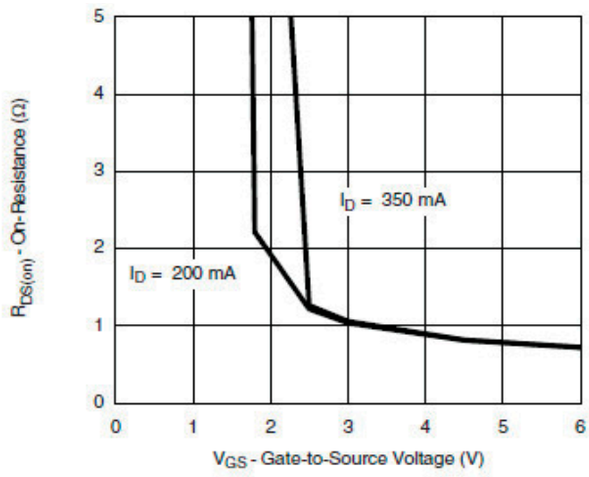
Gate Charge



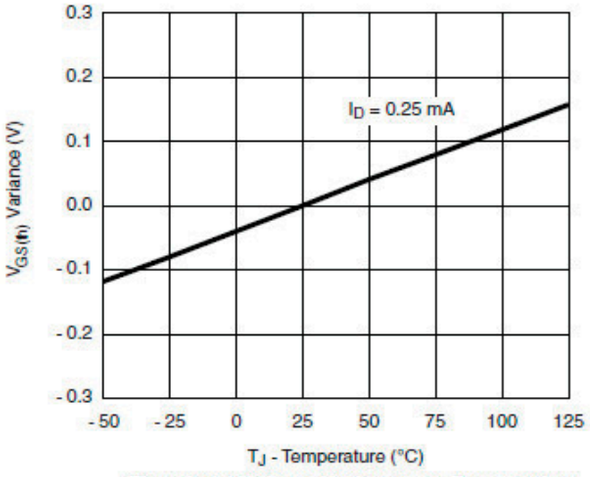
On-Resistance vs. Junction Temperature



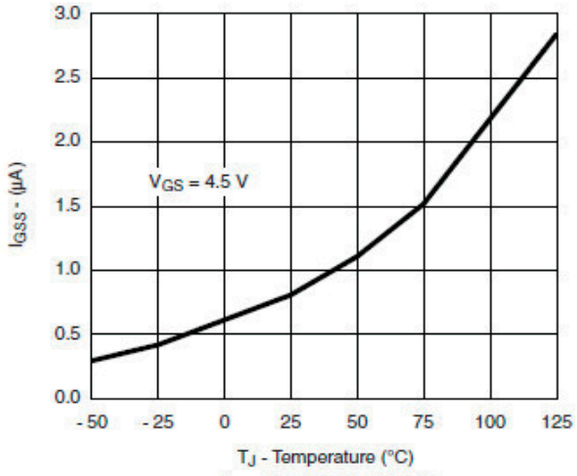
Source-Drain Diode Forward Voltage



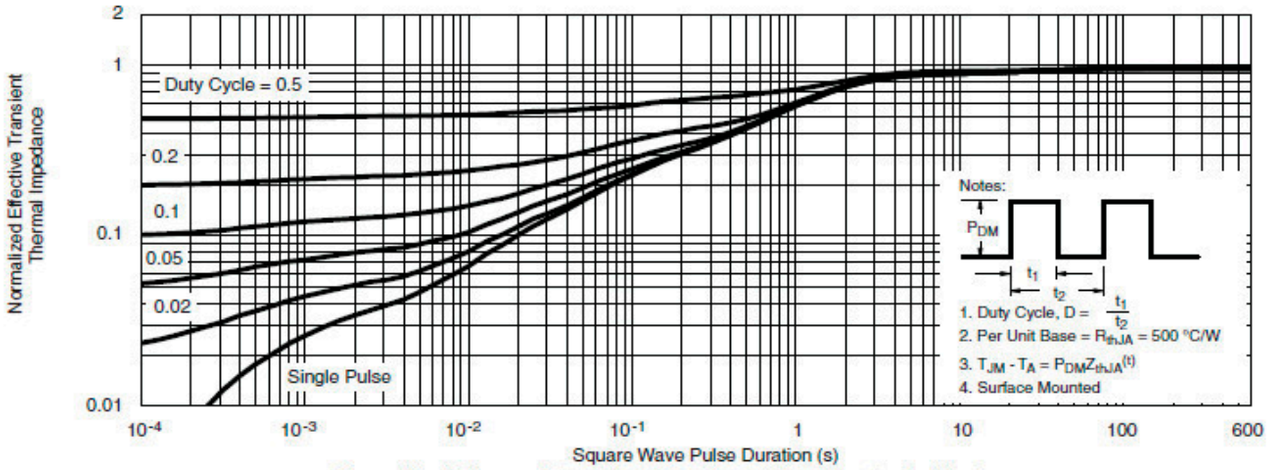
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage Variance vs. Temperature



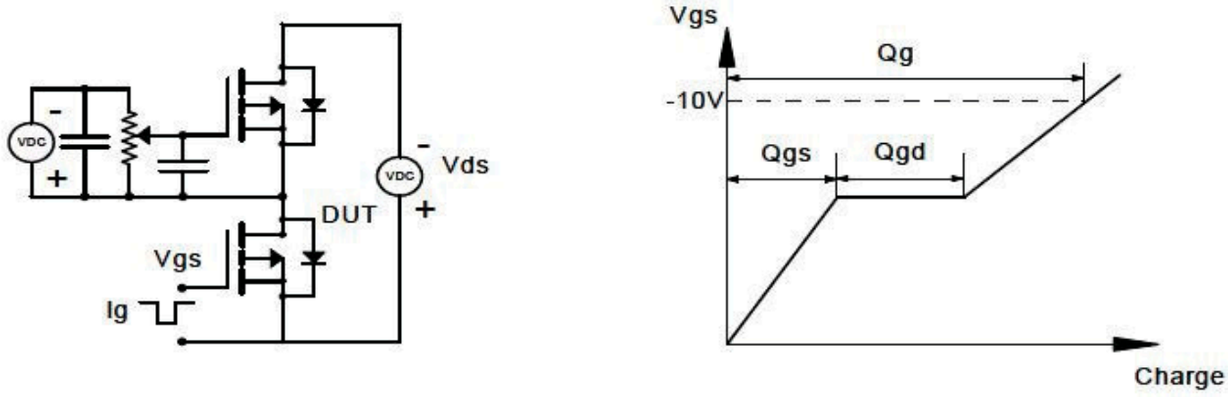
I_{GSS} vs. Temperature



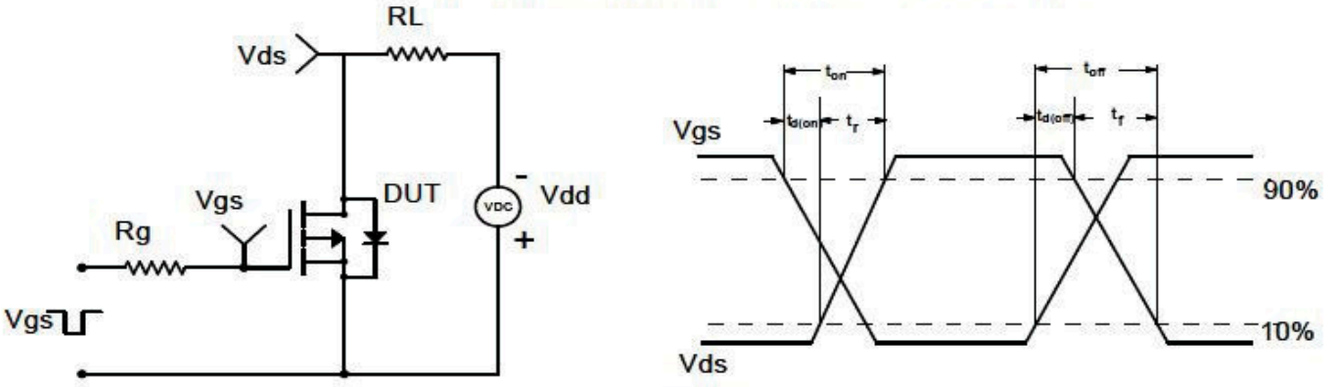
Normalized Thermal Transient Impedance, Junction-to-Ambient

■Test circuit & waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms