Single P-channel MOSFET

ELM57433A-S

■General description

ELM57433A-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

- Vds=-30V
- Id=-4.2A
- Rds(on) = 60mΩ (Vgs=-10V)
- Rds(on) = 80mΩ (Vgs=-4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

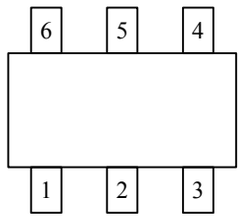
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	-30	V
Gate-source voltage		Vgs	±20	V
Continuous drain current	Ta=25°C	Id	-4.2	A
	Ta=70°C		-3.2	
Pulsed drain current		Idm	-8	A
Power dissipation	Tc=25°C	Pd	1.5	W
	Tc=70°C		1.0	
Operating junction temperature		Tj	150	°C
Storage temperature range		Tstg	- 55 to 150	°C

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	Rθja		120	°C/W

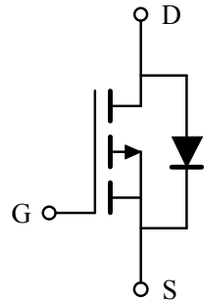
■Pin configuration

SC-70-6(TOP VIEW)



Pin No.	Pin name
1	DRAIN
2	DRAIN
3	GATE
4	SOURCE
5	DRAIN
6	DRAIN

■Circuit



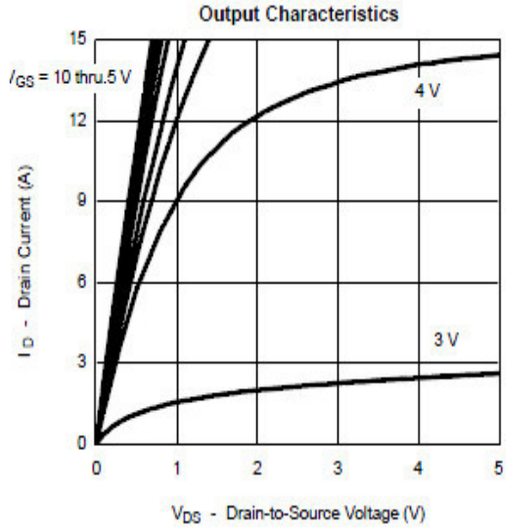
■Electrical characteristics

Ta=25°C. Unless otherwise noted.

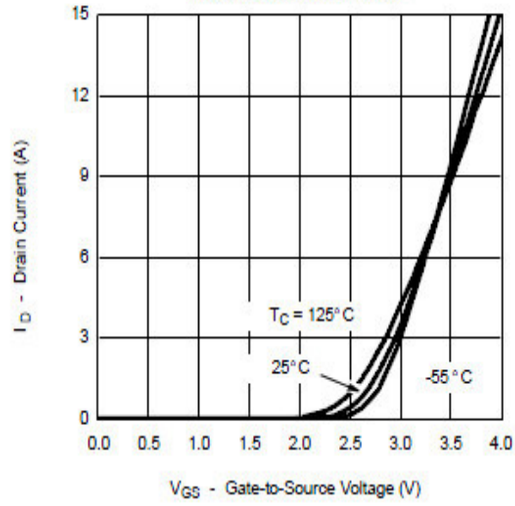
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-30			V
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V			-1	μA
		Vds=-24V, Vgs=0V, Ta=85°C			-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.5	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-5V	-10			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-3.6A		50	60	mΩ
		Vgs=-4.5V, Id=-3.2A		65	80	
Forward transconductance	Gfs	Vds=-5V, Id=-4.0A		10		S
Diode forward voltage	Vsd	Is=-1.7A, Vgs=0V		-0.7	-1.3	V
Max. body-diode continuous current	Is				-1.4	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-15V, f=1MHz		450		pF
Output capacitance	Coss			95		pF
Reverse transfer capacitance	Crss			55		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id≡-3.5A		10.0	18.0	nC
Gate-source charge	Qgs			1.6		nC
Gate-drain charge	Qgd			3.0		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V RL=15Ω, Id≡-1.0A Rgen=6.0Ω		8	18	ns
Turn-on rise time	tr			8	18	ns
Turn-off delay time	td(off)			25	50	ns
Turn-off fall time	tf			25	35	ns

■Typical electrical and thermal characteristics

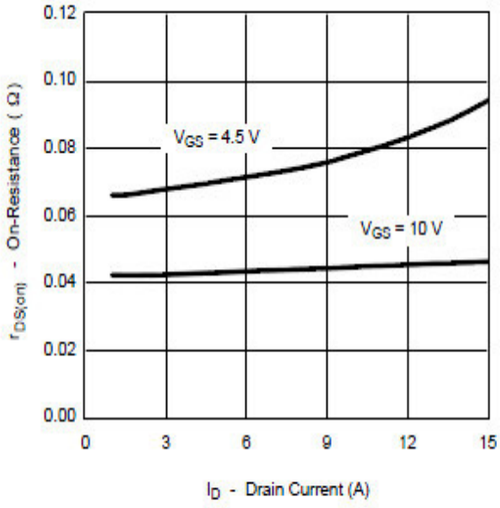
Output Characteristics



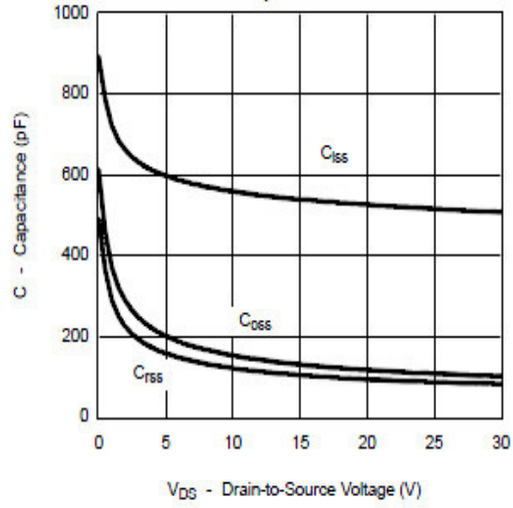
Transfer Characteristics



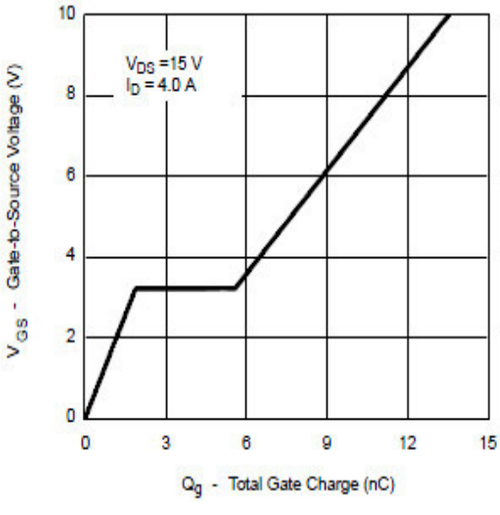
On-Resistance vs. Drain Current



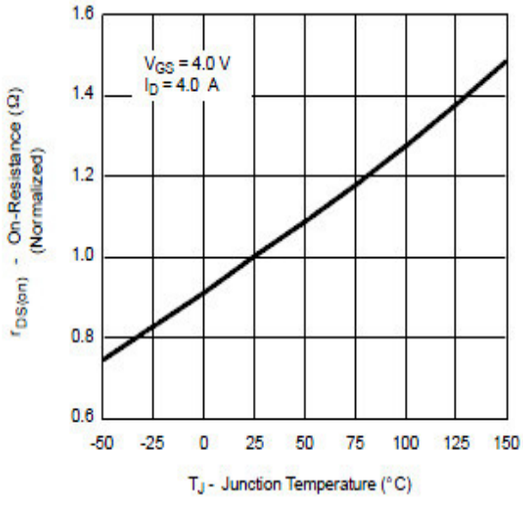
Capacitance



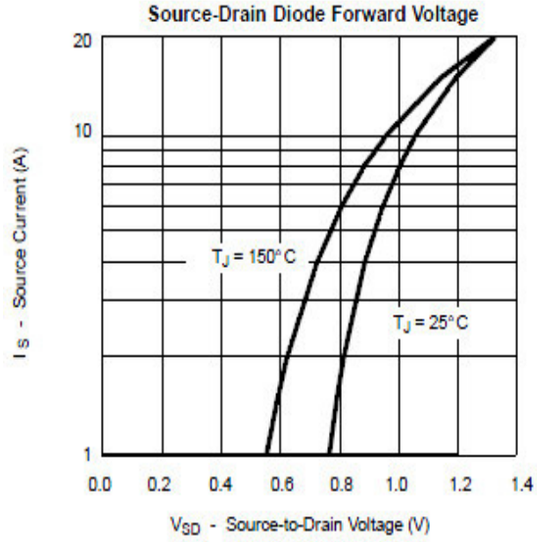
Gate Charge



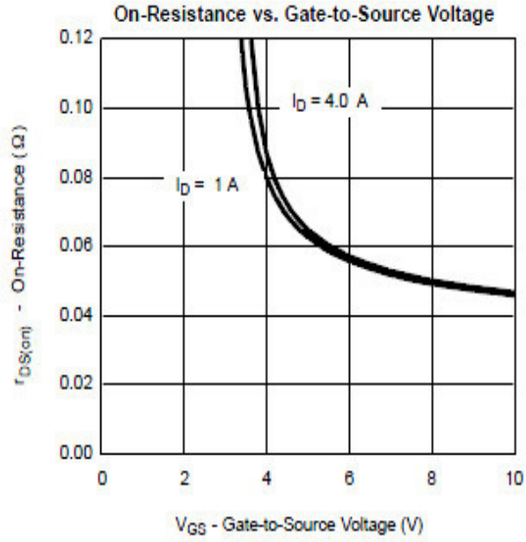
On-Resistance vs. Junction Temperature



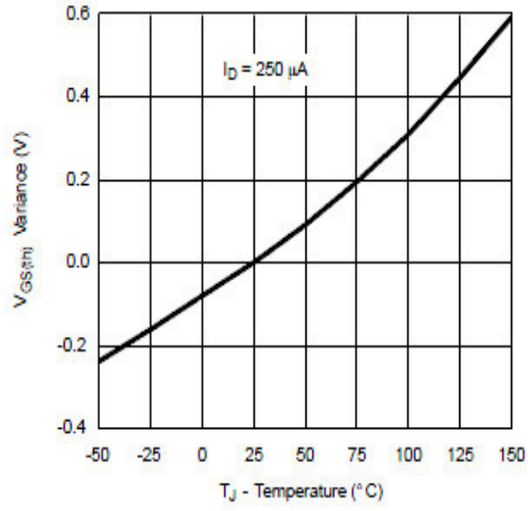
Source-Drain Diode Forward Voltage



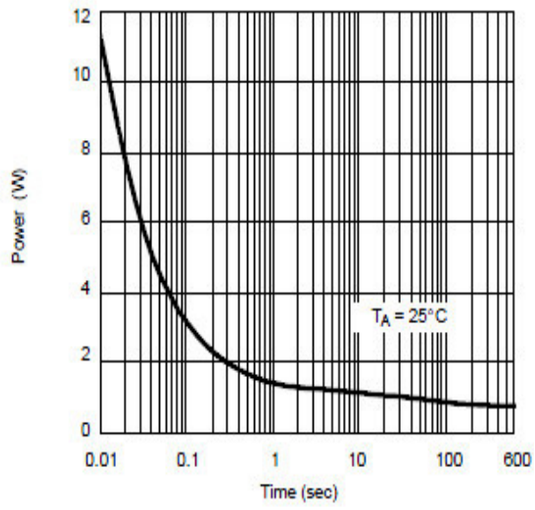
On-Resistance vs. Gate-to-Source Voltage



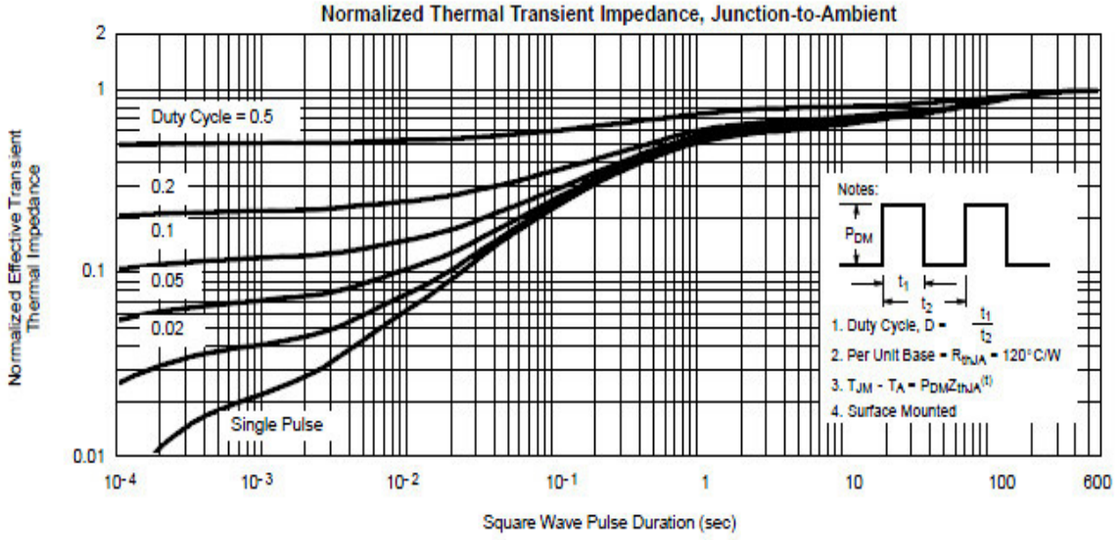
Threshold Voltage



Single Pulse Power

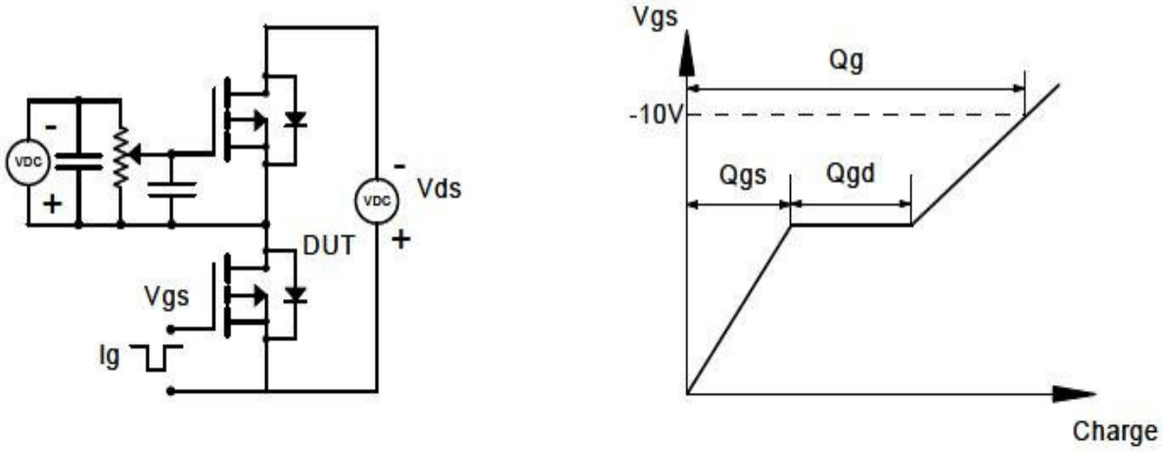


Normalized Thermal Transient Impedance, Junction-to-Ambient

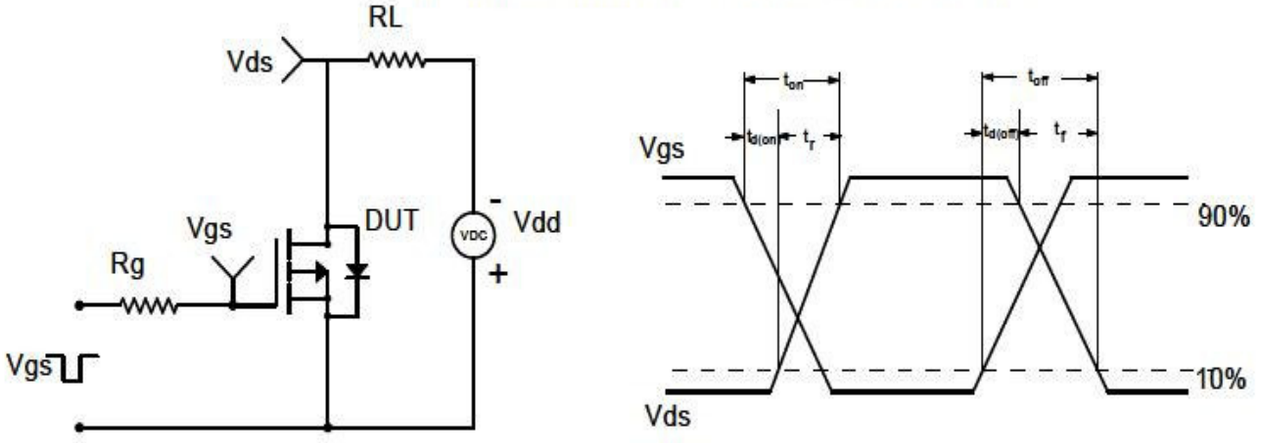


■Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms