

Single N-channel MOSFET

ELM36400EA-S

General description

ELM36400EA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds}=30V$
- $I_d=7A$
- $R_{ds(on)} < 27m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 40m\Omega$ ($V_{gs}=4.5V$)

Maximum absolute ratings

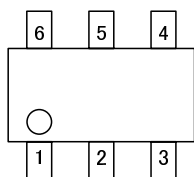
Parameter	Symbol	Limit	Unit	Note
Gate-source voltage	V_{gs}	± 20	V	
Continuous drain current	I_d	7	A	
		5		
Pulsed drain current	I_{dm}	20	A	3
Power dissipation	P_d	1.6	W	
		1.2		
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^{\circ}C$	

Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	$R\theta_{jc}$		30	$^{\circ}C/W$	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		78	$^{\circ}C/W$	

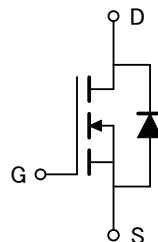
Pin configuration

SOT-26 (TOP VIEW)



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

Circuit



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■ Electrical characteristics

T_a=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BV _{dss}	I _d =250 μA, V _{gs} =0V	30			V	
Zero gate voltage drain current	I _{dss}	V _{ds} =24V, V _{gs} =0V			1	μA	
		V _{ds} =20V, V _{gs} =0V, T _j =125°C			10		
Gate-body leakage current	I _{gss}	V _{ds} =0V, V _{gs} =±20V			±100	nA	
Gate threshold voltage	V _{gs(th)}	V _{ds} =V _{gs} , I _d =250 μA	1.0	1.5	3.0	V	
On state drain current	I _{d(on)}	V _{gs} =10V, V _{ds} =5V	20			A	1
Static drain-source on-resistance	R _{ds(on)}	V _{gs} =10V, I _d =7A		23	27	mΩ	1
		V _{gs} =4.5V, I _d =5A		32	40	mΩ	
Forward transconductance	G _{fs}	V _{ds} =5V, I _d =7A		14.4		S	1
Diode forward voltage	V _{sd}	I _f =1A, V _{gs} =0V			1.1	V	1
Max. body-diode continuous current	I _s				3	A	
DYNAMIC PARAMETERS							
Input capacitance	C _{iss}	V _{gs} =0V, V _{ds} =10V, f=1MHz		680		pF	
Output capacitance	C _{oss}			140		pF	
Reverse transfer capacitance	C _{rss}			70		pF	
SWITCHING PARAMETERS							
Total gate charge	Q _g	V _{gs} =10V, V _{ds} =15V, I _d =7A		10.0	15.0	nC	2
Gate-source charge	Q _{gs}			1.7		nC	2
Gate-drain charge	Q _{gd}			2.1		nC	2
Turn-on delay time	t _{d(on)}	V _{gs} =10V, V _{ds} =10V, I _d ≈ 1A R _{gen} =6 Ω		8.0		ns	2
Turn-on rise time	t _r			4.0		ns	2
Turn-off delay time	t _{d(off)}			22.0		ns	2
Turn-off fall time	t _f			5.0		ns	2

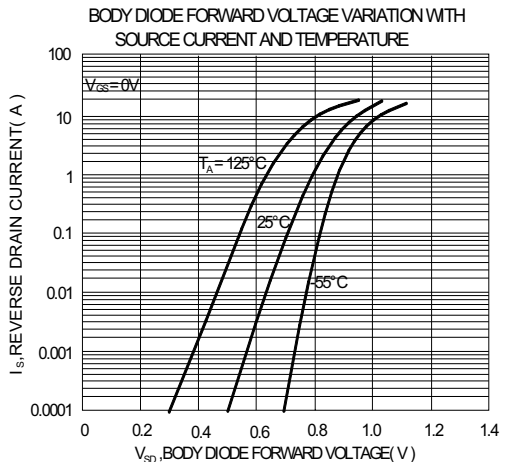
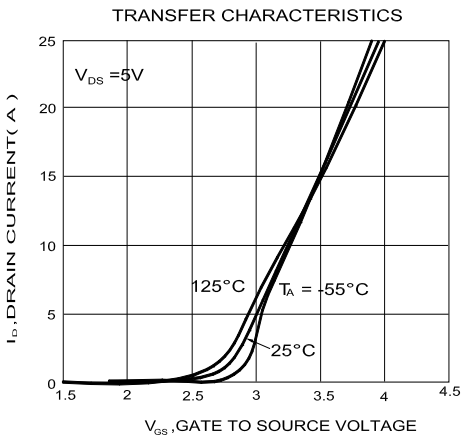
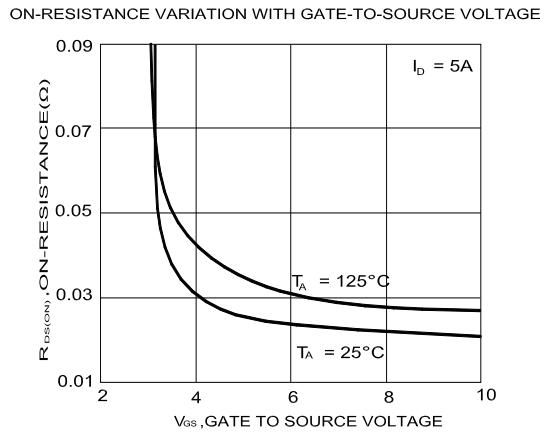
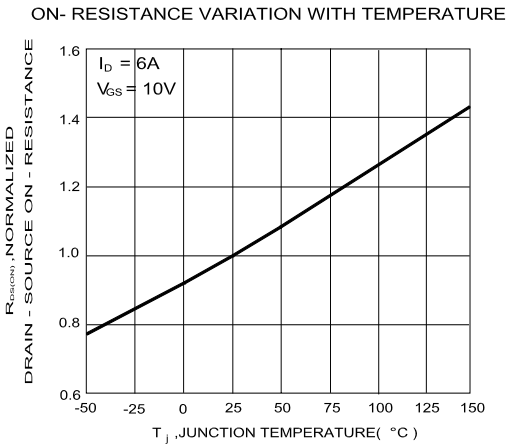
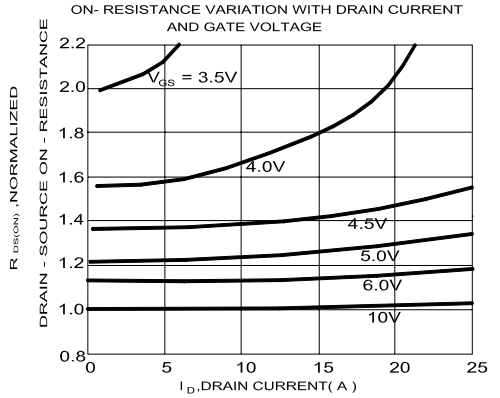
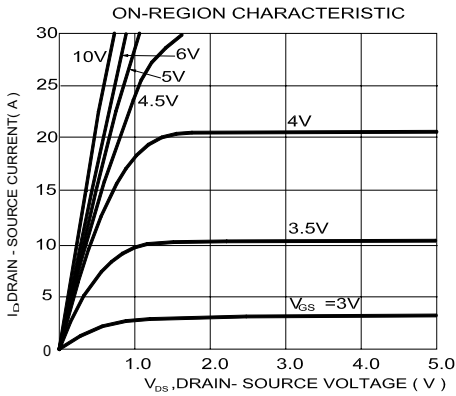
NOTE :

1. Pulse test : Pulsed width ≤ 300 μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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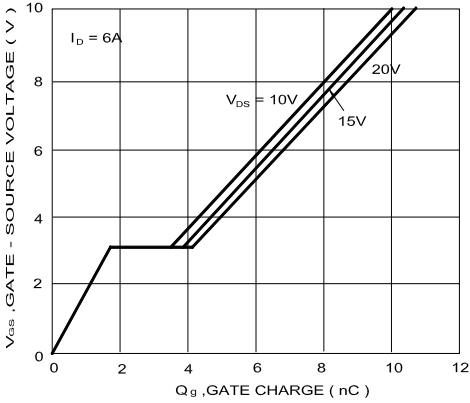
Typical electrical and thermal characteristics



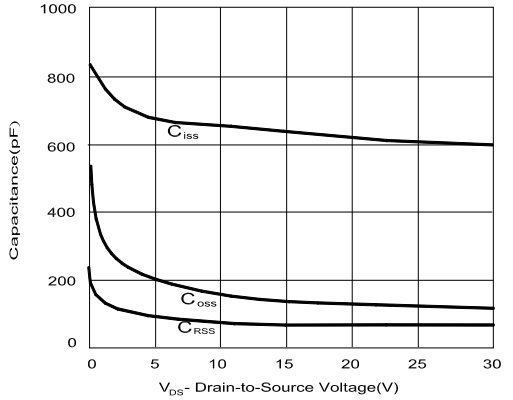
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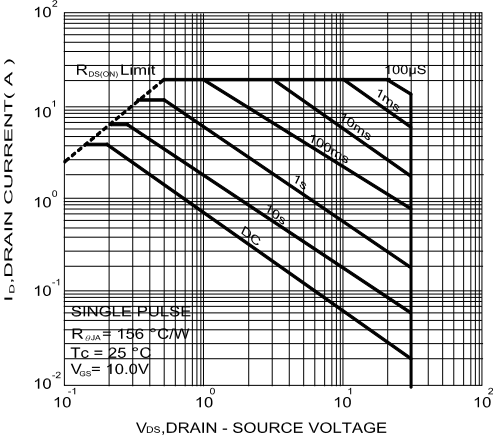
GATE CHARGE CHARACTERISTICS



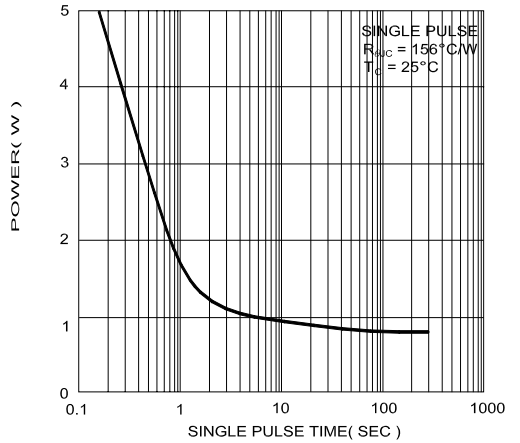
Capacitance Characteristics



MAXIMUM SAFE OPERATING AREA



SINGLE PULSE MAXIMUM POWER DISSIPATION



TRANSIENT THERMAL RESPONSE CURVE

