

Dual N-channel MOSFET

ELM36800EA-S

General description

ELM36800EA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds}=30V$
- $I_d=3.5A$
- $R_{ds(on)} < 68m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 98m\Omega$ ($V_{gs}=4.5V$)

Maximum absolute ratings

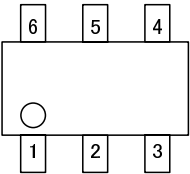
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		V_{ds}	30	V	
Gate-source voltage		V_{gs}	± 20	V	
Continuous drain current	$T_a=25^{\circ}C$	I_d	3.5	A	
	$T_a=70^{\circ}C$		2.8		
Pulsed drain current		I_{dm}	10	A	3
Power dissipation	$T_a=25^{\circ}C$	P_d	1.15	W	
	$T_a=70^{\circ}C$		0.73		
Junction and storage temperature range		T_j, T_{stg}	-55 to 150	$^{\circ}C$	

Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	$t \leq 10s$	$R\theta_{ja}$		110	$^{\circ}C/W$	
Maximum junction-to-ambient	Steady-state			150	$^{\circ}C/W$	
Maximum junction-to-lead	Steady-state	$R\theta_{jl}$		80	$^{\circ}C/W$	

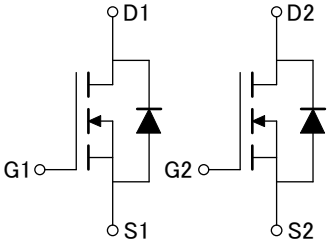
Pin configuration

SOT-26 (TOP VIEW)



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

Circuit



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■ Electrical characteristics

Ta=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 _d s=24V, V _{gs} =0V			1	μA	
		V _d s=20V, V _{gs} =0V, T _j =55°C			10		
Gate-body leakage current	I _{gss}	V _d s=0V, V _{gs} =±20V			±100	nA	
Gate threshold voltage	V _{gs} (th)	V _d s=V _{gs} , I _d =250 μA	1.0	1.5	2.5	V	
On state drain current	I _d (on)	V _{gs} =10V, V _d s=5V	10			A	1
Static drain-source on-resistance	R _{ds} (on)	V _{gs} =10V, I _d =3.5A		55	68	mΩ	1
		V _{gs} =4.5V, I _d =2A		75	98	mΩ	
Forward transconductance	G _{fs}	V _d s=5V, I _d =3.5A		4.5		S	1
Diode forward voltage	V _{sd}	I _f =0.8A, V _{gs} =0V			1.2	V	1
DYNAMIC PARAMETERS							
Input capacitance	C _{iss}	V _{gs} =0V, V _d s=15V, f=1MHz		200	240	pF	
Output capacitance	C _{oss}			40		pF	
Reverse transfer capacitance	C _{rss}			20		pF	
SWITCHING PARAMETERS							
Total gate charge	Q _g	V _{gs} =10V, V _d s=15V, I _d =3.5A		6.5	8.5	nC	2
Gate-source charge	Q _{gs}			1.2		nC	2
Gate-drain charge	Q _{gd}			1.6		nC	2
Turn-on delay time	t _d (on)	V _{gs} =10V, V _d s=15V, I _d ≅ 1A R _l =15 Ω, R _{gen} =6 Ω		7	11	ns	2
Turn-on rise time	t _r			12	18	ns	2
Turn-off delay time	t _d (off)			12	18	ns	2
Turn-off fall time	t _f			7	11	ns	2
Body diode reverse recovery time	t _{rr}	I _f =0.8A, dI/dt=100A/ μs		40	80	ns	

NOTE :

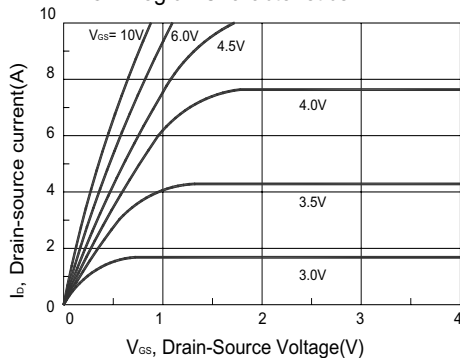
1. Pulsed width $\leq$ 300 μ sec and Duty cycle $\leq$ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle $\leq$ 1%.

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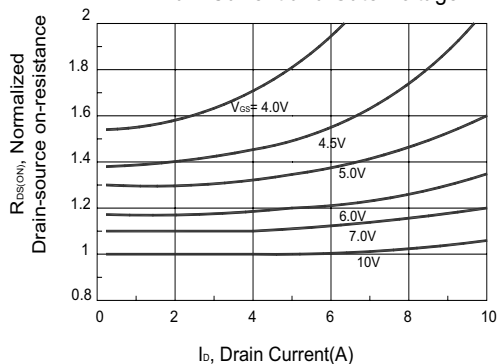
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Typical electrical and thermal characteristics

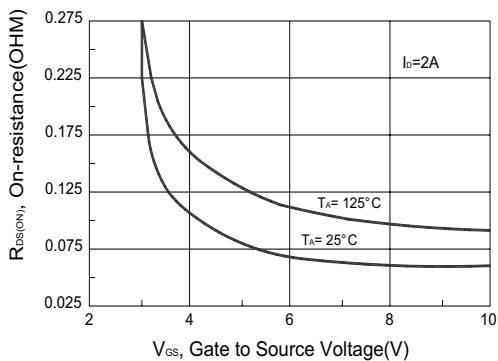
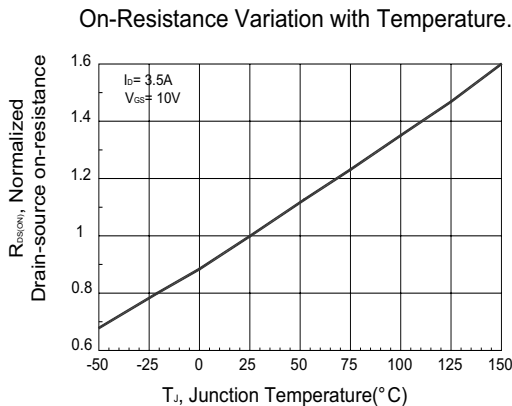
On-Region Characteristics.



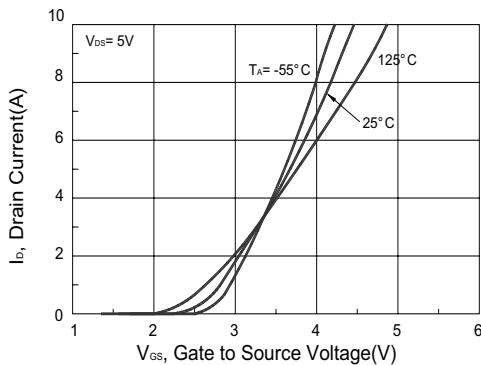
On-Resistance Variation with Drain Current and Gate Voltage.



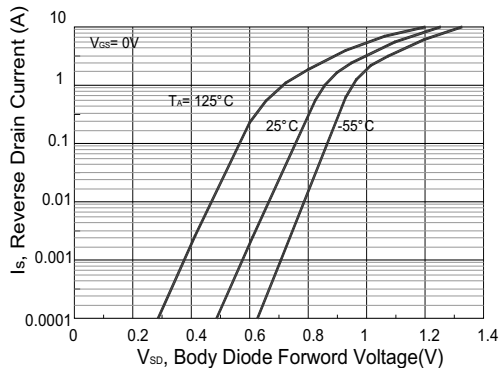
On-Resistance Variation with Gate-to-Source Voltage.



Transfer Characteristics.



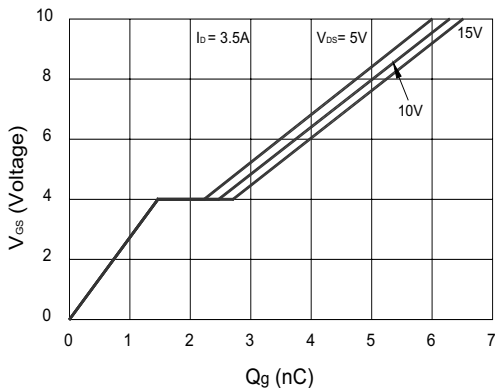
Body Diode Forward Voltage Variation with Source Current and Temperature.



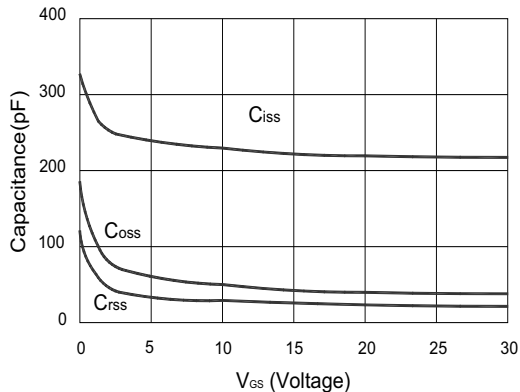
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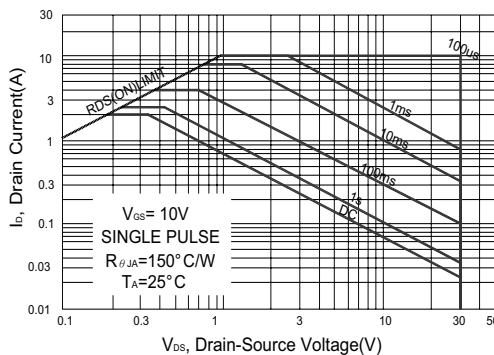
Gate-Charge Characteristics



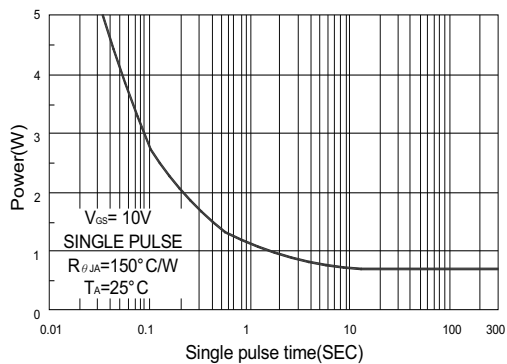
Capacitance Characteristics



Maximum Safe Operating Area.



Single Pulse Maximum Power Dissipation.



Transient Thermal Response Curve.

