N channel 70V MOSFET

1. Description

The HS1018E is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

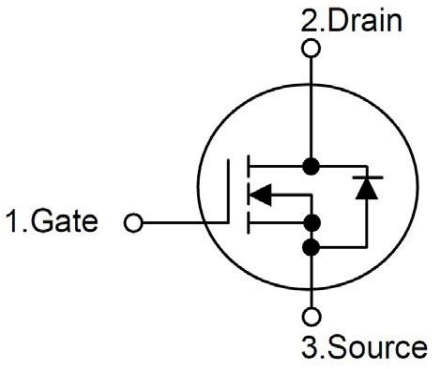
2. Feature

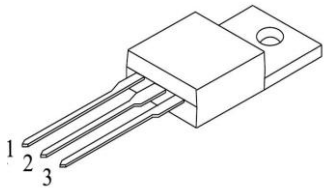
- $R_{DS(ON)} \leqq 6.8m\Omega @ V_{GS}=10V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

V_{DS}	70	V
$R_{DS(on)}$	6.8	mΩ
I_D	90	A

3. Pin configuration

Order Number	Package
HS1018E	TO-220





TO-220

4. Absolute maximum ratings (Tc=25℃ Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DSS}	70	V
Gate-Source Voltage		V_{DSS}	±20	V
Continuous Drain Current	Tc=25℃	I_D	90	A
	Tc=70℃		75	A
Pulsed Drain Current		I_{DM}	355	A
Power Dissipation	Tc=25℃	P_D	200	W
	Tc=70℃		140	
Operating Junction and Storage Temperature Range		T_J, Tstg	-55 to 175	℃

5. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, case to sink typ.	R_{thCS}	0.5	°C/W
Thermal resistance junction to case.	R_{thJC}	0.75	°C/W
Thermal resistance junction to ambient.	R_{thJC}	62.5	°C/W

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6. Electrical characteristics (T_A =25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	70			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=VGS, I_D=250μA	2		4	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=70V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance*	V_{GS}=10V, I_D=40A		5.8	6.8	mΩ
V_{SD}	Diode Forward Voltage *	I_S=40A, V_{GS}=0V		1	1.3	V
DYNAMIC						
Qg	Total Gate Charge	V_{DD}=48V, V_{GS}=10V, I_D=50A		83		Nc
Qg	Total Gate Charge	V_{DD}=48V, V_{GS}=4.5V, I_D=50A		20		
Qgs	Gate-Source Charge			24		
Qgd	Gate-Drain Charge			26		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		0.8		Ω
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		4650		pF
Coss	Output Capacitance			312		
Crss	Reverse Transfer Capacitance			220		
$t_{d(on)}$	Turn-On Delay Time	V_{GS} =10V, R_L=30Ω V_{DD}=30V, R_G=3.6Ω		39		ns
tr	Turn-On Rise Time			13		
$t_{d(off)}$	Turn-Off Delay Time			84		
tf	Turn-Off Fall Time			13		

Notes :a. pulse test:pulse width ≦300 us,duty cycle 2% ,Guaranteed by design,not subject to production testing.

b. HOMSEMI reserves the right to improve product design,functions and reliability without notice.

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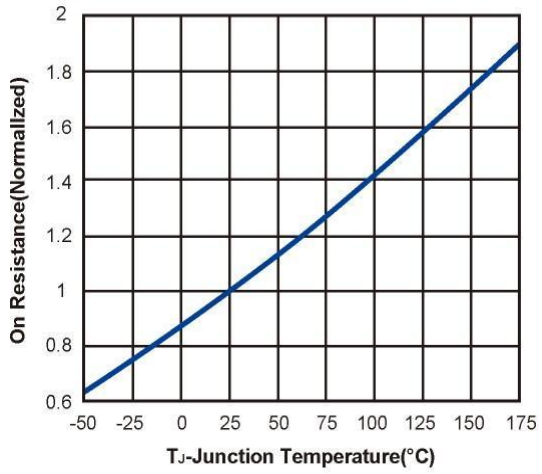
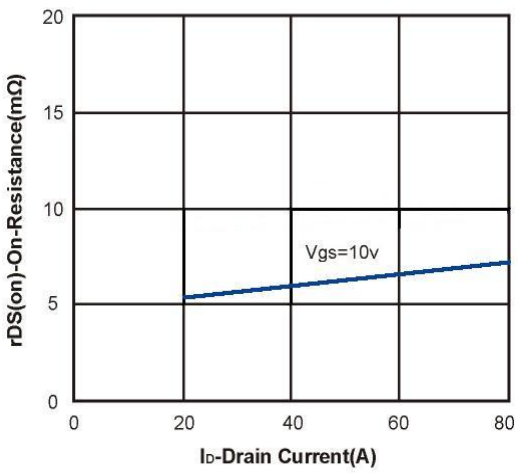
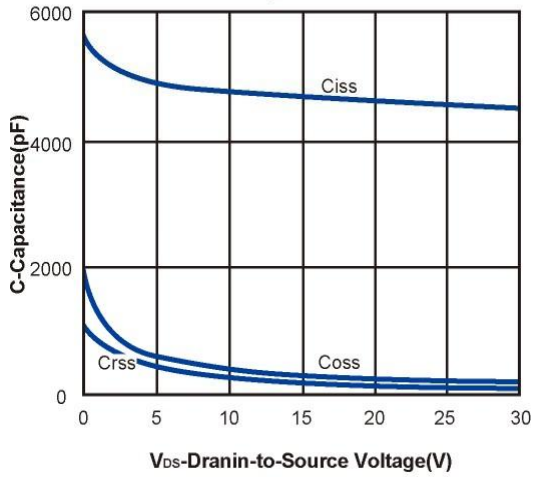
On Resistance vs. Junction Temperature



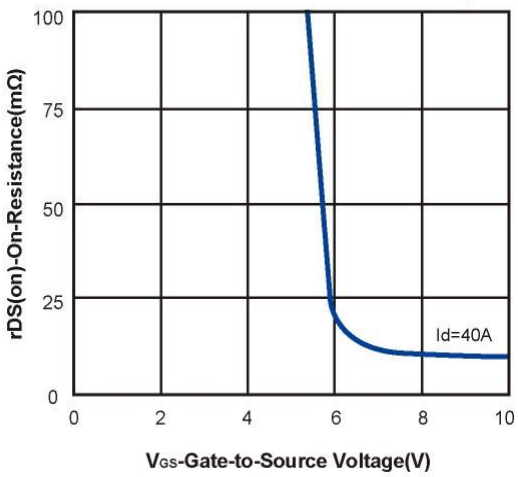
On Resistance vs. Drain Current



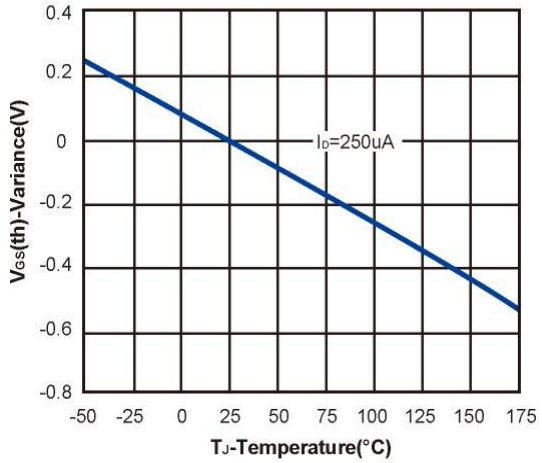
Capacitance



On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics