

***N channel 60V MOSFET***

**1. Description**

The HS1010E 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.

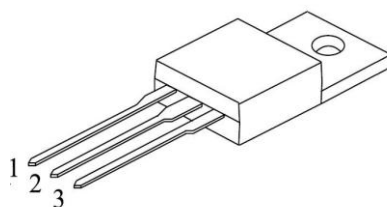
**2. Feature**

- $R_{DS(on)} \leq 9m\Omega @ V_{GS}=10V$
- Super high density cell design for extremely low  $R_{DS(on)}$
- Exceptional on-resistance and maximum DC current capability

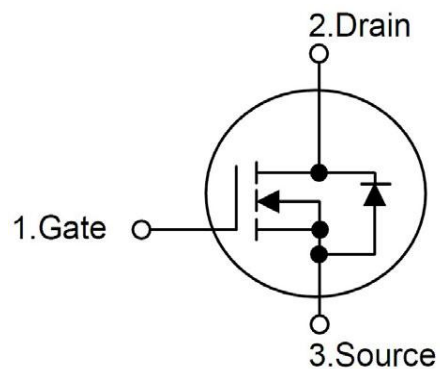
V <sub>DS</sub>	60	V
R <sub>DS(on)</sub>	9	mΩ
I <sub>D</sub>	85	A

**3. Pin configuration**

Order Number	Package
HS1010E	TO-220



**TO-220**



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**4. Absolute maximum ratings (Tc=25°C Unless Otherwise Noted)**

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V <sub>DSS</sub>	60	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Continuous Drain Current	T <sub>c</sub> =25°C	I <sub>D</sub>	85	A
	T <sub>c</sub> =70°C		71	A
Pulsed Drain Current		I <sub>DM</sub>	350	A
Power Dissipation	T <sub>c</sub> =25°C	P <sub>D</sub>	200	W
	T <sub>c</sub> =70°C		140	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 175	°C

**5. Thermal characteristics**

Parameter	Symbol	Ratings	Units
Thermal resistance, case-to-sink typ.	R <sub>thCS</sub>	0.5	°C/W
Thermal resistance junction to case.	R <sub>thJC</sub>	0.75	°C/W
Thermal resistance junction to ambient.	R <sub>thJA</sub>	62	°C/W

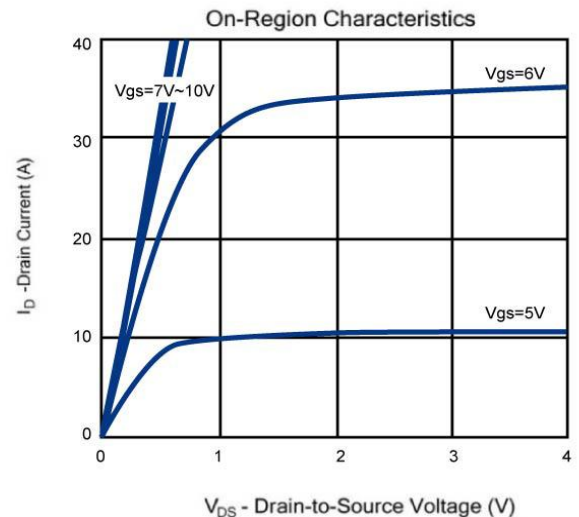
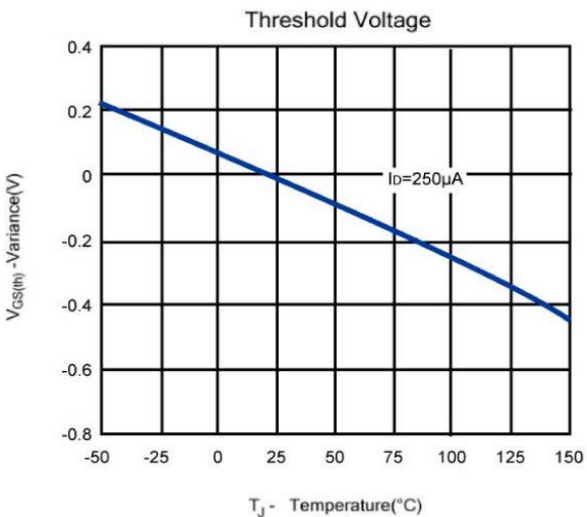
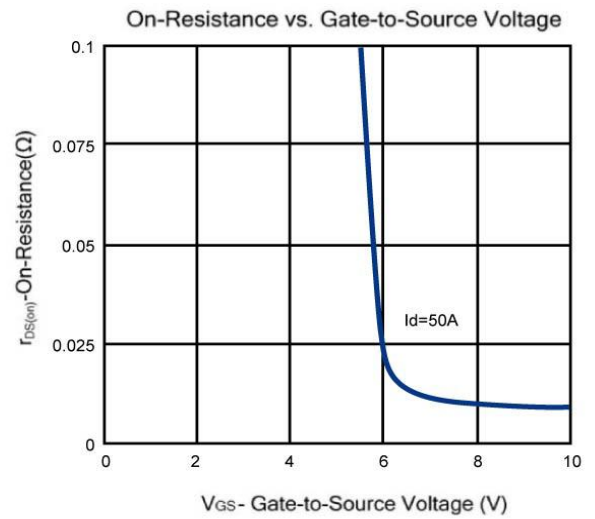
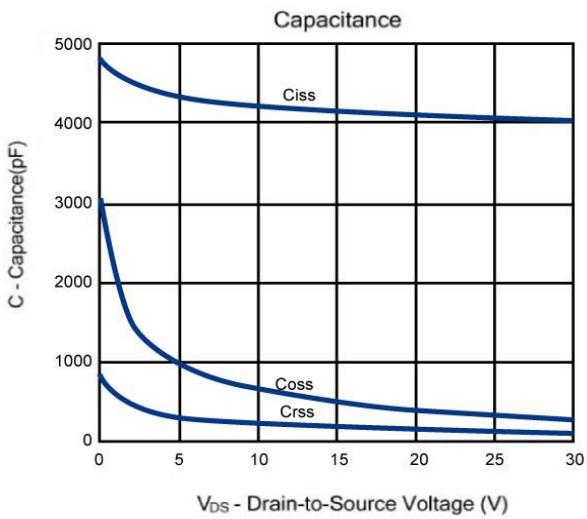
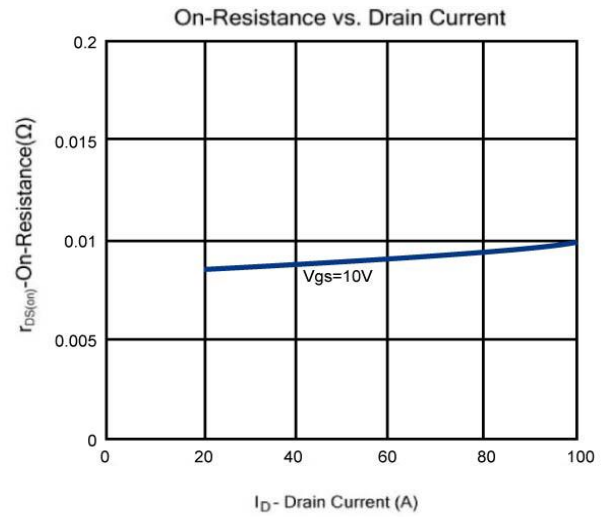
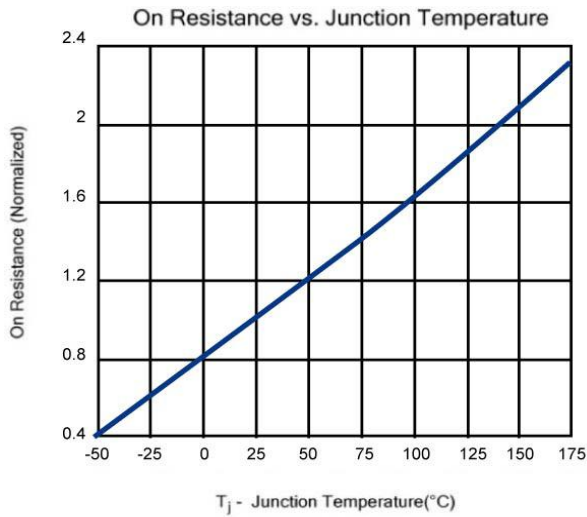
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**6. Electrical characteristics (TA =25°C Unless Otherwise Specified)**

Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	60	-	-	V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2	-	4	V
IGSS	Gate-Body Leakage	VDS=0V, VGS=±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=60V, VGS=0V	-	-	1	μA
RDS(ON)	Drain-Source On-Resistance	VGS=10V, ID=40A	-	9	12	mΩ
VSD	Diode Forward Voltage	IS=40A, VGS=0V	-	0.8	1.2	V
<b>DYNAMIC</b>						
Qg	Total Gate Charge	VDD=48V, VGS=10V, ID=50A	-	91	-	nC
Qg	Total Gate Charge	VDD=48V, VGS=4.5V, ID=50A	-	21	-	
Qgs	Gate-Source Charge		-	21	-	
Qgd	Gate-Drain Charge		-	30	-	
Rg	Gate Resistance	VDS=0V, VGS=0V, f=1MHz	-	0.8	-	Ω
Ciss	Input Capacitance	VDS=15V, VGS=0V, f=1MHz	-	4150	-	pF
Coss	Output Capacitance		-	487	-	
Crss	Reverse Transfer Capacitance		-	155	-	
td(on)	Turn-On Delay Time	VGS =10V, RL=30Ω VDD=30V, RG=3.6Ω	-	35	-	ns
tr	Turn-On Rise Time		-	16	-	
td(off)	Turn-Off Delay Time		-	91	-	
tf	Turn-Off Fall Time		-	36	-	

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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