

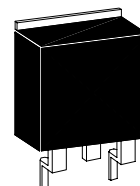


HU603AL

N-Channel Logic Level Enhancement Mode Field Effect Transistor

Description

This very high density process has been especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as DC/DC converters and other battery powered circuits where fast switching, low in-line power loss, and resistance to transients are needed.



Absolute Maximum Ratings (Ta=25°C)

- Maximum Temperatures
 Operating and Storage Temperature -65 ~ +175 °C
- Maximum Power Dissipation
 Total Power Dissipation at Tc=25°C 60 W
 Derate Above 25°C 0.4 W / °C
- Maximum Voltages and Currents
 Drain-Source Voltage 30 V
 Gate-Source Voltage -Continuous..... ±20 V
 Drain Current -Continuous 30 A
 Drain Current -Pulsed 100 A
 Thermal Resistance, Junction-to-Case 2.5 °C / W
 Thermal Resistance, Junction-to-Ambient..... 62.5 °C / W

Electrical Characteristics

• Off Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	-	-	10	uA
+I _{GSS}	Gate-Body Leakage ,Forward	V _{GS} =20V, V _{DS} =0V	-	-	100	nA
-I _{GSS}	Gate-Body Leakage ,Reverse	V _{GS} =-20V, V _{DS} =0V	-	-	-100	nA

• On Characteristics

V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.1	-	3	V
		V _{DS} =V _{GS} , I _D =10mA	1.4	-	3	
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =25A	-	0.018	0.022	Ω
		V _{GS} =4.5V, I _D =10A	-	0.029	0.040	
I _{DS(on)}	On-State Drain Current	V _{GS} =10V, V _{DS} =10V	60	-	-	A
		V _{GS} =4.5V, V _{DS} =10V	15	-	-	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =25A	-	26	-	S

• Dynamic Characteristic

C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V f=1.0Mhz	-	1100	-	pF
C _{oss}	Output Capacitance		-	600	-	pF
C _{rss}	Reverse Transfer Capacitance		-	180	-	pF



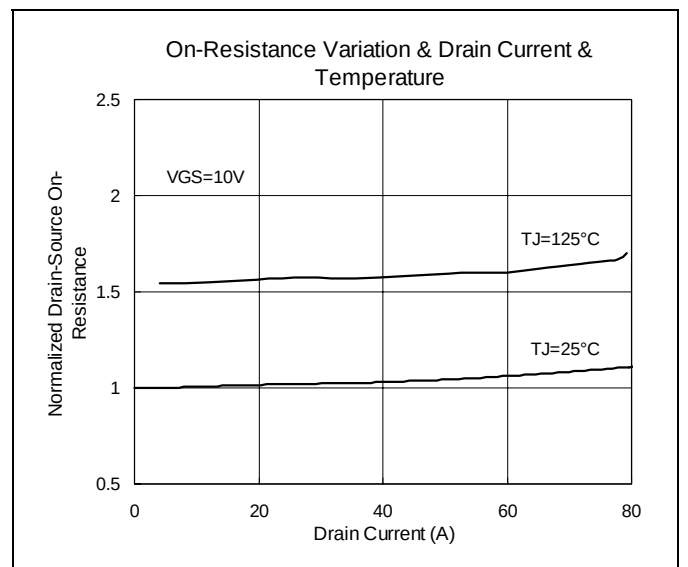
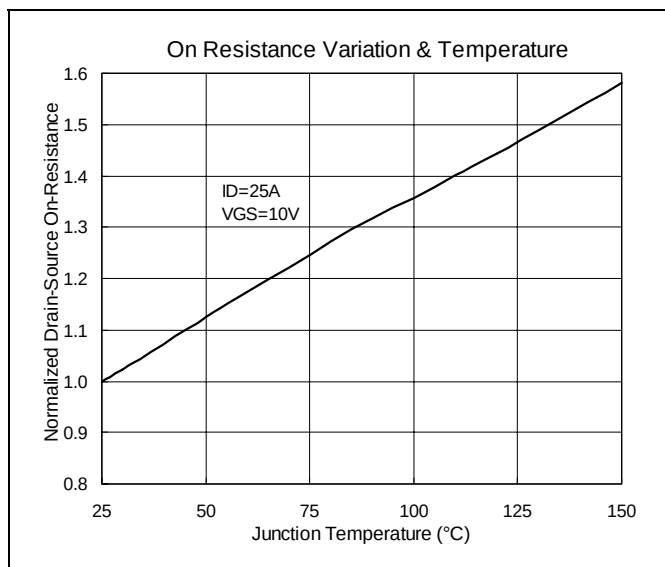
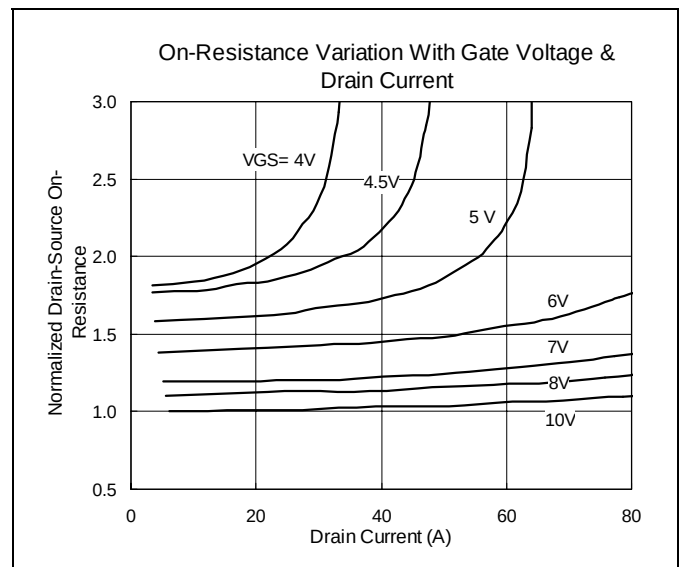
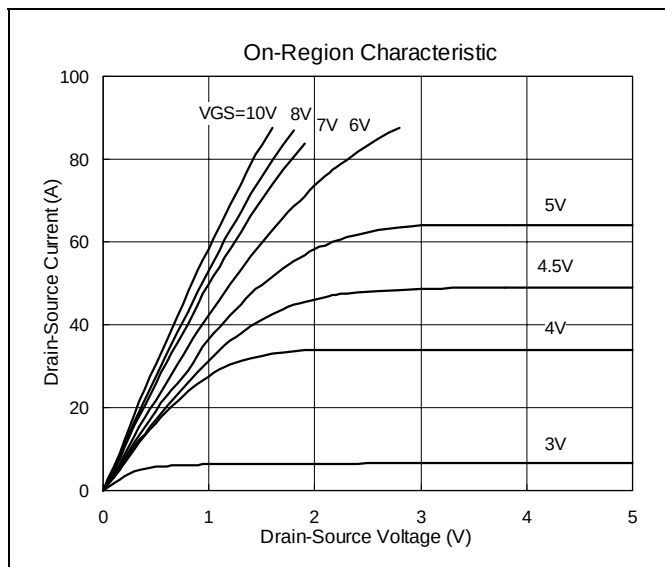
• Switching Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
T(on)	Turn-On Delay Time	$V_{DS}=15V, I_D=25A$ $V_{GS}=10V, R_{GEN}=24\Omega$	-	-	30	ns
	Turn-On Rise Time		-	-	110	ns
T(off)	Turn-Off Delay Time		-	-	150	ns
	Turn-Off Fall Time		-	-	130	ns
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=25A,$ $V_{GS}=10V$	-	-	45	nC
Q_{gs}	Gate-Source Charge		-	-	10	nC
Q_{gd}	Gate-Drain Charge		-	-	10	nC

• Drain-Source Diode Characteristics And Maximum Ratings

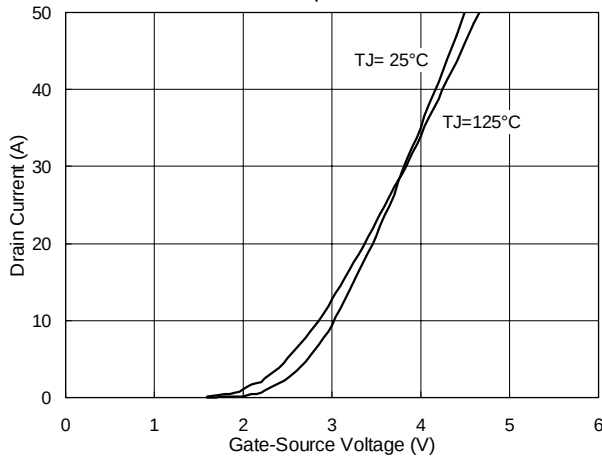
V_{SD}	Maximum Continuous Drain-Source Diode Forward Current		-	-	25	A
	Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=25A$	-	-	1.3	V

Characteristics Curve

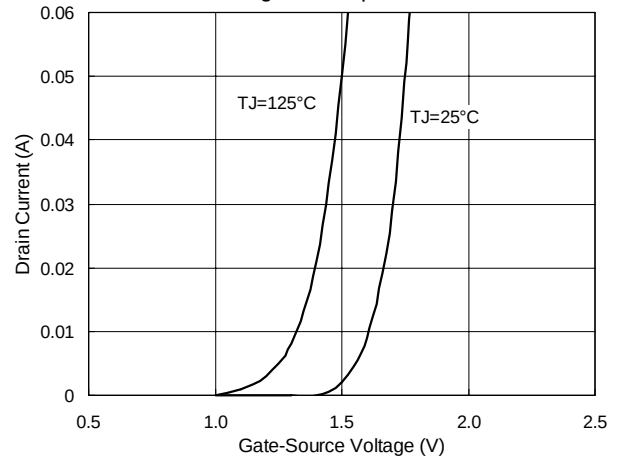




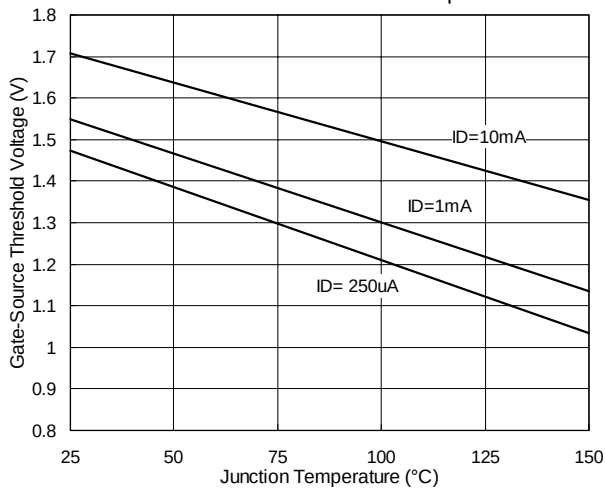
Drain Current Variation & Gate Voltage & Temperature



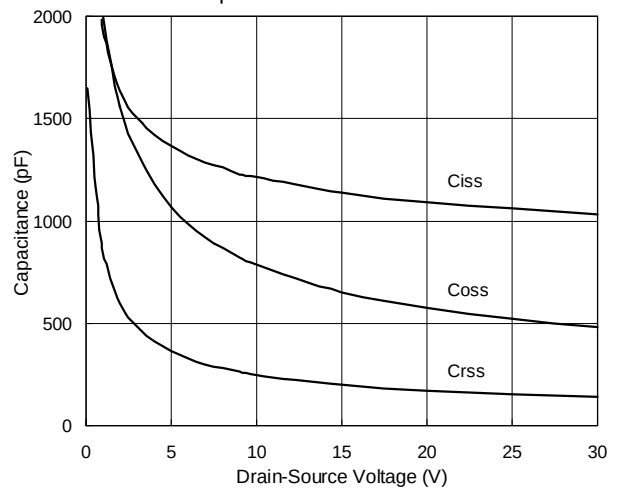
Sub-Threshold Drain Current Variation & Gate Voltage & Temperature



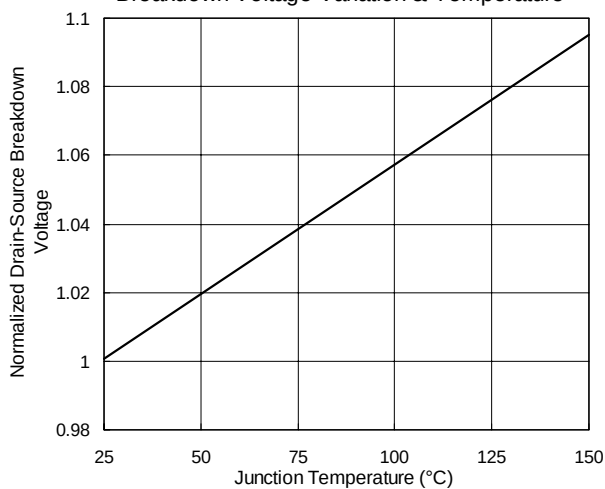
Gate Threshold Variation & Temperature



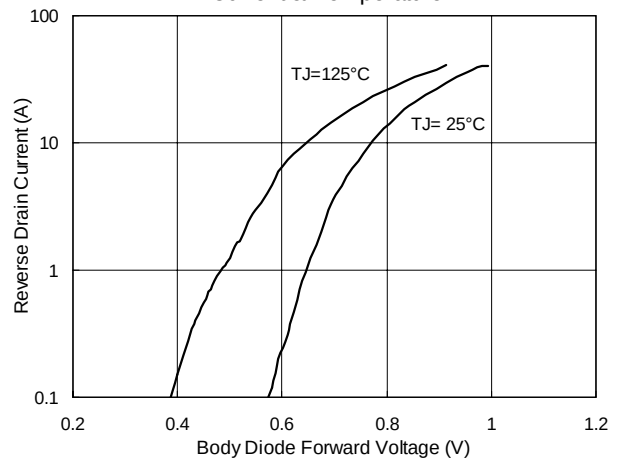
Capacitance Characteristics



Breakdown Voltage Variation & Temperature

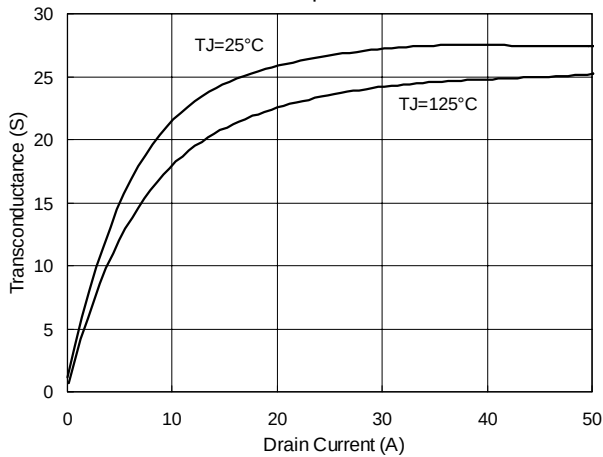


Body Diode Forward Voltage Variation & Current & Temperature

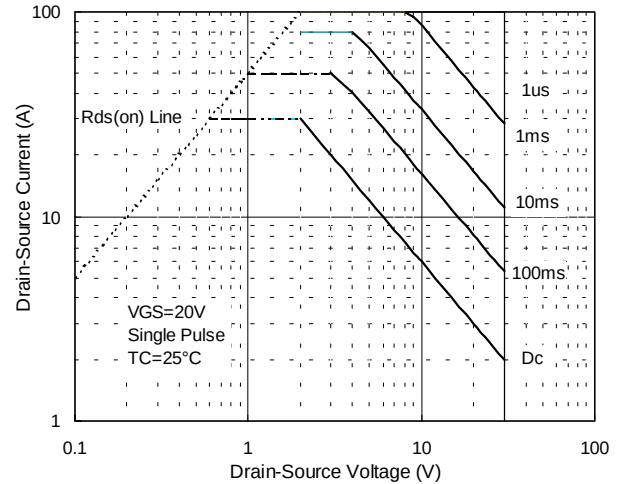




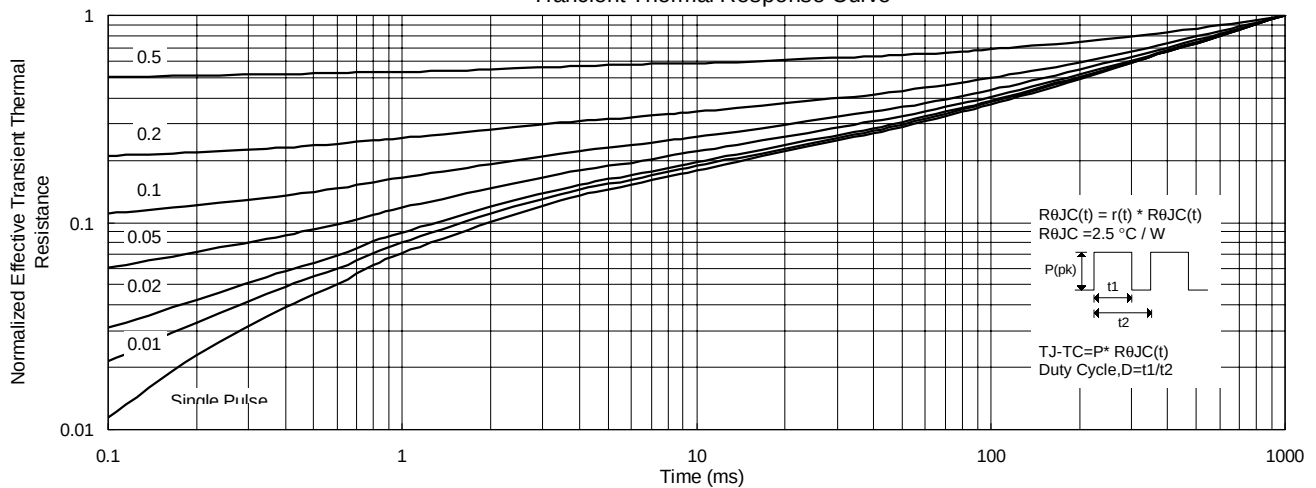
Transductance Variation & Drain Current & Temperature



Maximum Safe Operating Area

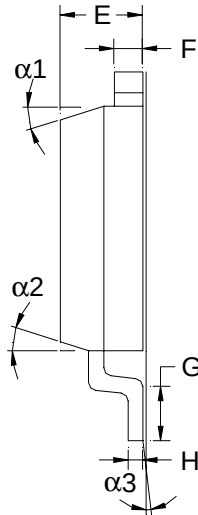
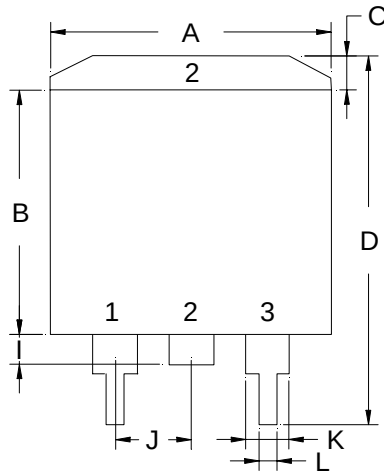


Transient Thermal Response Curve

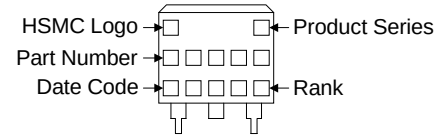




TO-263 Dimension



Marking :



Style : Pin 1. Gate 2. Drain 3. Source

3-Lead TO-263 Plastic Surface Mounted Package
HSMC Package Code : U

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.3800	0.4050	9.65	10.29	I	0.0500	0.0700	1.27	1.78
B	0.3300	0.3700	8.38	9.40	J	-	*0.1000	-	*2.54
C	-	0.0550	-	1.40	K	0.0450	0.0550	1.14	1.40
D	0.5750	0.6250	14.61	15.88	L	0.0200	0.0390	0.51	0.99
E	0.1600	0.1900	4.06	4.83	α1	-	-	6°	8°
F	0.0450	0.0550	1.14	1.40	α2	-	-	6°	8°
G	0.0900	0.1100	2.29	2.79	α3	-	-	0°	5°
H	0.0180	0.0290	0.46	0.74					

Notes : 1.Dimension and tolerance based on our Spec. dated Jan. 09,1998.

2.Controlling dimension : millimeters.

3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

4.If there is any question with packing specification or packing method, please contact your local HSMC sales office.

Material :

- Lead : 42 Alloy ; solder plating
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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