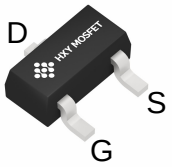
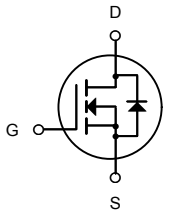
Description

The HI6702 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



SOT-23



N-Channel MOSFET

General Features

V_{DS} = 40V I_D =5A
$R_{DS(ON)}$ < 38mΩ @ V_{GS}=10V
$R_{DS(ON)}$ < 52mΩ @ V_{GS}=4.5V

Application

Battery protection
Load switch
Uninterruptible power supply

Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HI6702	SOT-23	2318	3000

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	5	A
	Drain Current – Continuous (T_C=70 ℃)	4.2	A
P_D	Power Dissipation (T_C=25℃)	1.56	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction to ambient	80	℃/W

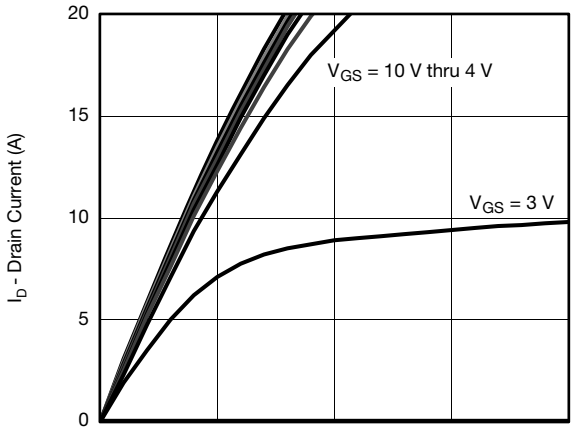
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25℃ (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=40V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=40V, V_{GS}=0V	--	--	100	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.7	1.9	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=10V, I_D=5A	--	30	38	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=4.5V, I_D=4A	--	36	52	mΩ
Dynamic Electrical Characteristics @ T_J = 25℃ (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	--	340	--	pF
C_{oss}	Output Capacitance		--	60	--	pF
C_{rss}	Reverse Transfer Capacitance		--	30	--	pF
R_g	Gate Resistance	f=1MHz		7.8		Ω
Q_g	Total Gate Charge	V_{DS}=20V I_D=5A, V_{GS}=10V	--	5.8	--	nC
Q_{gs}	Gate Source Charge		--	0.4	--	nC
Q_{gd}	Gate Drain Charge		--	2	--	nC
Switching Characteristics @ T_J = 25℃ (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=20V, I_D=3.5A, R_G=1Ω, V_{GS}=4.5V	--	4.1	--	ns
t_r	Turn on Rise Time		--	11.6	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	24	--	ns
t_f	Turn Off Fall Time		--	7.6	--	ns
Source Drain Diode Characteristics @ T_J = 25℃ (unless otherwise stated)						
I_{SD}	Source drain current(Body Diode)	T_A=25℃	--	--	1.75	A
V_{SD}	Forward on voltage②	T_j=25℃, I_{SD}=3.5A, V_{GS}=0V	--	0.79	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

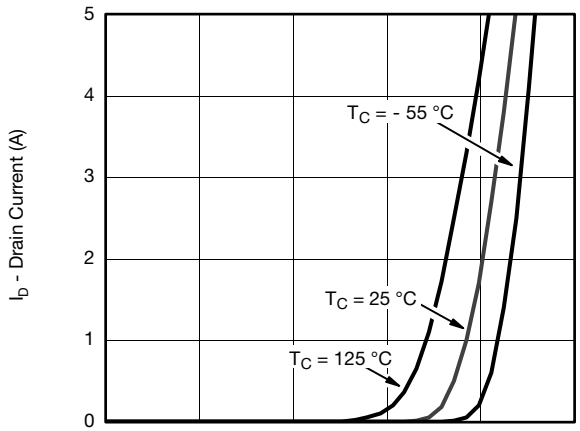
②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



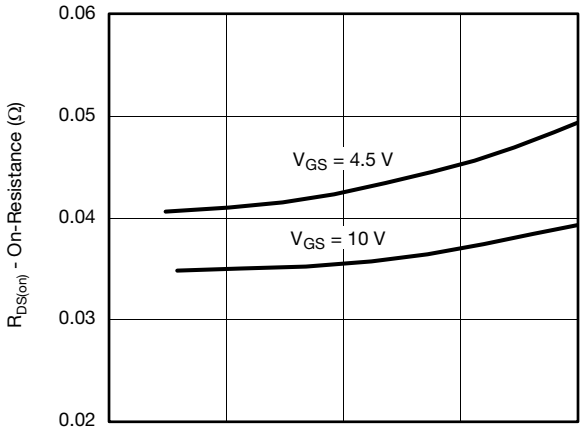
V_{DS} - Drain-to-Source Voltage (V)

Output Characteristics



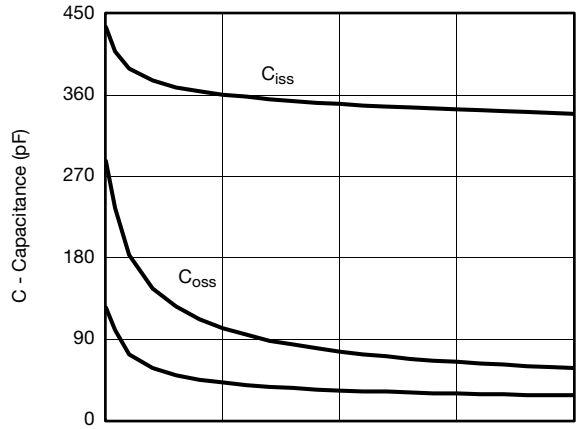
V_{GS} - Gate-to-Source Voltage (V)

Transfer Characteristics



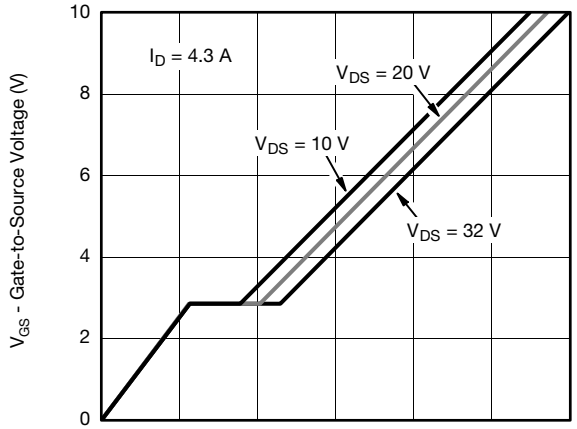
I_D - Drain Current (A)

On-Resistance vs. Drain Current and Gate Voltage



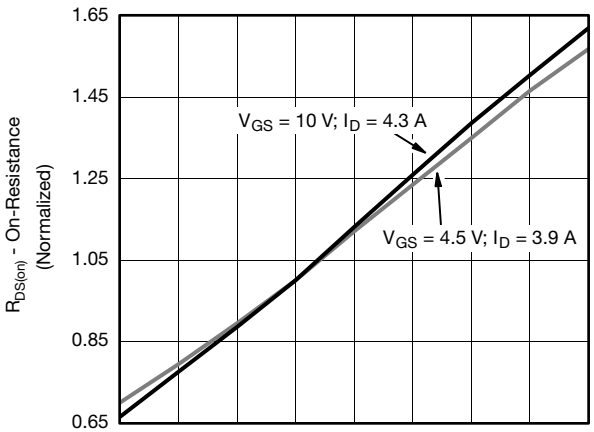
V_{DS} - Drain-to-Source Voltage (V)

Capacitance



Q_g - Total Gate Charge (nC)

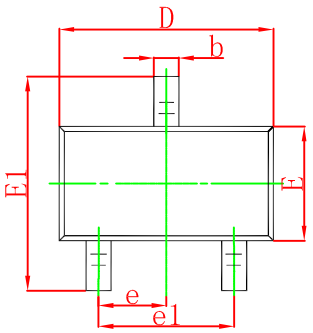
Gate Charge

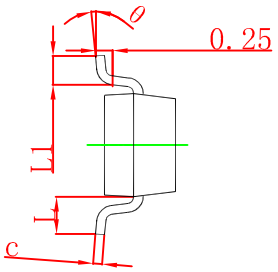


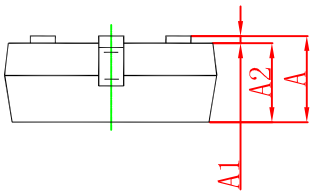
T_J - Junction Temperature (°C)

On-Resistance vs. Junction Temperature

SOT-23 Package Outline Dimensions

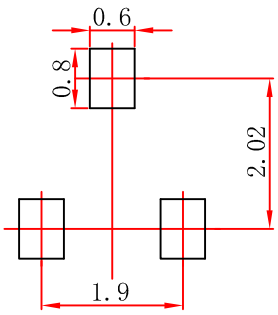






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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