

Description

The HI5110 uses advanced trench technology to provide excellent R_{DS(ON)}, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

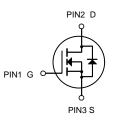
General Features

 $V_{DS} = 20V, I_D = 7A$ $R_{DS(ON)} < 17m\Omega @ V_{GS} = 4.5V$ $R_{DS(ON)} < 25m\Omega @ V_{GS} = 2.5V$





N-Channel MOSFET



Application

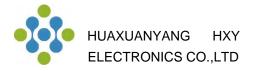
High power and current handing capability Lead free product is acquired Surface mount package PWM applications

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HI5110	SOT-23	2320	3000PCS

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit	
Vds	Drain-Source Voltage	20	V	
Vgs	Gate-Source Voltage	±12	V	
ID	Drain Current-Continuous	7	A	
Ідм	Drain Current-Pulsed (Note 1)	32	A	
PD	Maximum Power Dissipation	2	W	
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C	
Reja	Thermal Resistance, Junction-to-Ambient (Note 2)	120	°C /W	



Electrical Characteristics (TJ=25°C unless otherwise specified)

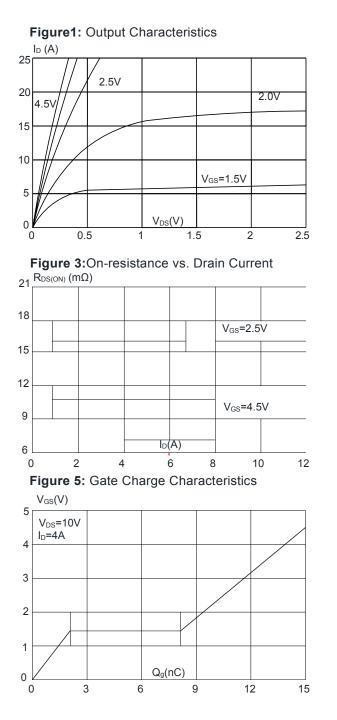
Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Units
Off Charac	cteristic			I	1	1
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250µA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±12V	-	-	±100	nA
On Charac	teristics		·			
$V_{GS(th)}$	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250µA	0.5	0.75	1.2	V
D	Static Drain-Source on-Resistance	V _{GS} =4.5V, I _D =7A	-	15	17	mΩ
$R_{DS(on)}$	note2	V _{GS} =2.5V, I _D =5A	-	19	25	
Dynamic C	Characteristics					
Ciss	Input Capacitance		-	700	-	pF
Coss	Output Capacitance	→ V _{DS} =10V, V _{GS} =0V, → f=1.0MHz	-	132	-	pF
Crss	Reverse Transfer Capacitance		-	114	-	pF
Qg	Total Gate Charge	− V _{DS} =10V, I _D =4A, − V _{GS} =4.5V	-	15	-	nC
Q_gs	Gate-Source Charge		-	2	-	nC
Q_{gd}	Gate-Drain("Miller") Charge	VGS- - V	-	5.2	-	nC
Switching	Characteristics					
t _{d(on)}	Turn-on Delay Time	14 4014	-	9	-	ns
tr	Turn-on Rise Time	─ V _{DS} =10V,	-	25	-	ns
t _{d(off)}	Turn-off Delay Time	$V_{GS}=4.5V$	-	37	-	ns
t _f	Turn-off Fall Time	- 101	-	14	-	ns
Drain-Sou	rce Diode Characteristics and Maxim	um Ratings				
ls	Maximum Continuous Drain to Source Diode Forward Current		-	-	7.5	Α
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	32	Α
V_{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =8A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300µs, Duty Cycle≤0.5%



Typical Performance Characteristics



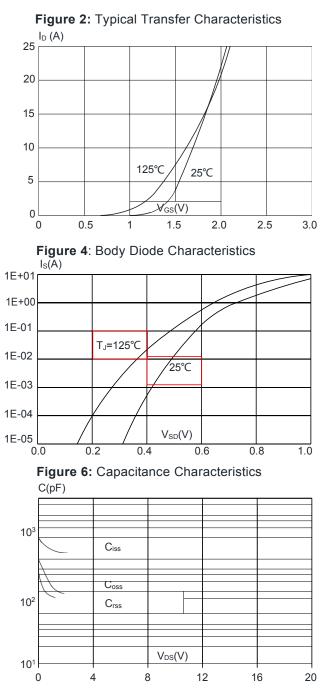




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

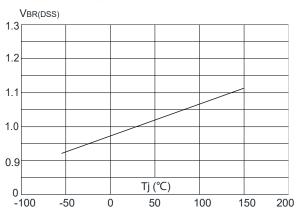


Figure 9: Maximum Safe Operating Area

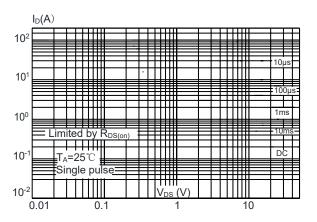


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

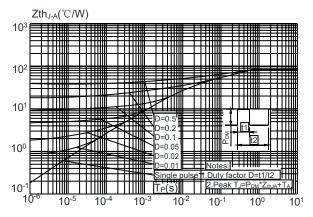


Figure 8: Normalized on Resistance vs. Junction Temperature

N-Channel Enhancement Mode MOSFET

HI5110

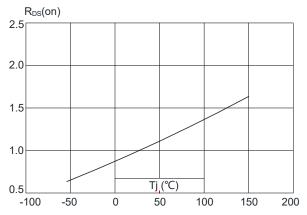
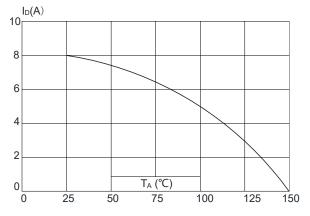
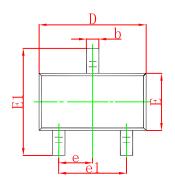


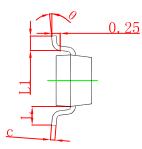
Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

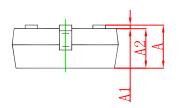




SOT-23 Package Outline Dimensions

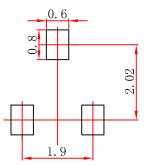






Symbol	Dimensions In Millimeters		Dimensions In Inches		
	Min	Max	Min	Max	
Α	0.900	1.150	0.035	0.045	
A1	0.000	0.100	0.000	0.004	
A2	0.900	1.050	0.035	0.041	
b	0.300	0.500	0.012	0.020	
С	0.080	0.150	0.003	0.006	
D	2.800	3.000	0.110	0.118	
E	1.200	1.400	0.047	0.055	
E1	2.250	2.550	0.089	0.100	
е	0.950 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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