

General Description

The HSM05P15 uses advanced trench MOSFET technology to provide excellent $R_{DS(ON)}$ and gate charge for use in a wide variety of other applications.

The HSM05P15 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

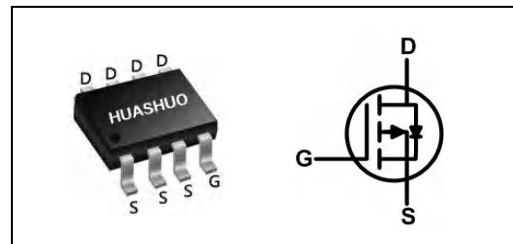
Features

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench Technology

Product Summary

V_{DS}	-150	V
$R_{DS(ON),typ}$	290	m Ω
I_D	-5	A

SOP-8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-150	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-5	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-3	A
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2	A
$I_D@T_A=100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-1.4	A
I_{DM}	Pulsed Drain Current ²	-8	A
EAS	Single Pulse Avalanche Energy ³	73	mJ
$P_D@T_A=25^\circ C$	Total Power Dissipation ⁴	3	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	45	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	30	$^\circ C/W$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-2A$	---	290	345	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-2	-2.7	-4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-150V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-2A$	---	10	---	S
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0\text{MHz}$	---	5	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-50V, V_{GS}=-10V, I_D=-2A$	---	39	---	nC
Q_{gs}	Gate-Source Charge		---	8.1	---	
Q_{gd}	Gate-Drain Charge		---	9.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-50V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-2A$	---	33	---	ns
T_r	Rise Time		---	27	---	
$T_{d(off)}$	Turn-Off Delay Time		---	250	---	
T_f	Fall Time		---	130	---	
C_{iss}	Input Capacitance	$V_{DS}=-50V, V_{GS}=0V, f=1\text{MHz}$	---	2021	---	pF
C_{oss}	Output Capacitance		---	44	---	
C_{rss}	Reverse Transfer Capacitance		---	37	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	---	---	-5	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-2A, di/dt=-100A/\mu s, T_J=25^\circ\text{C}$	---	35	---	nS
Q_{rr}	Reverse Recovery Charge		---	32	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=-50V, V_{GS}=-10V, L=0.5mH$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

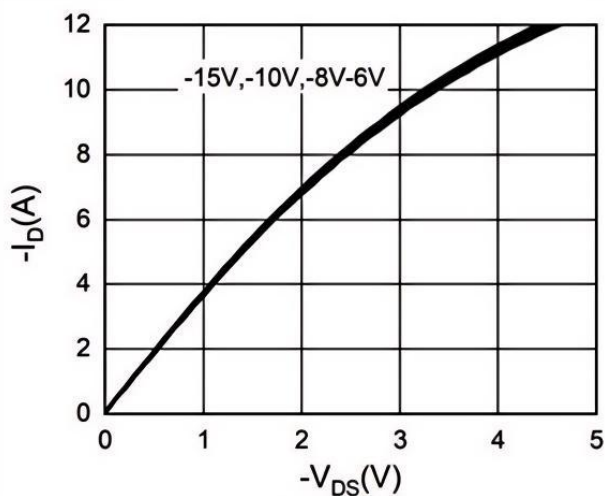


Fig.1 Typical Output Characteristics

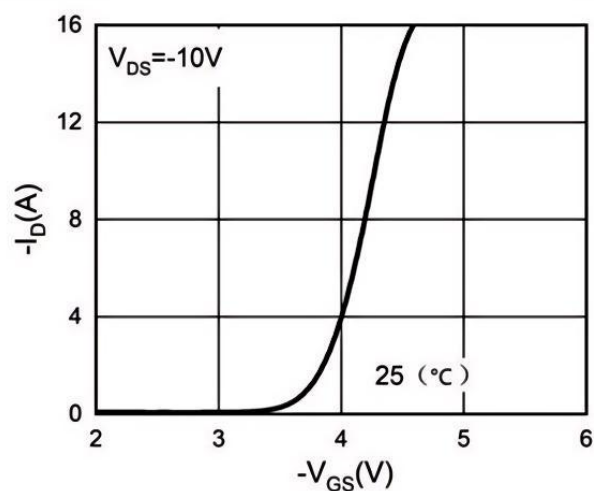


Fig.2 Transfer Characteristics

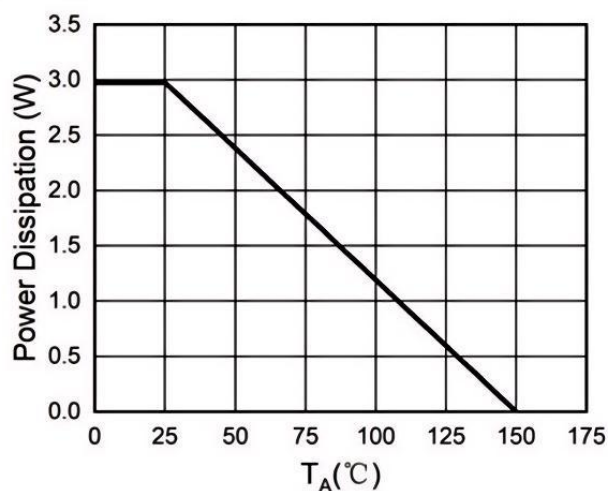


Fig.3 Power Dissipation

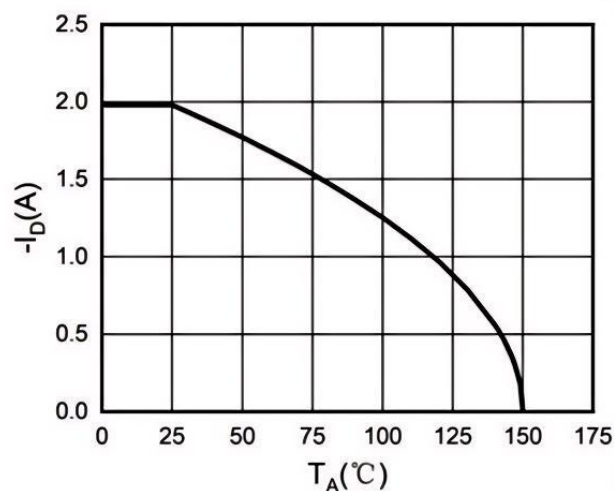


Fig.4 Drain Current

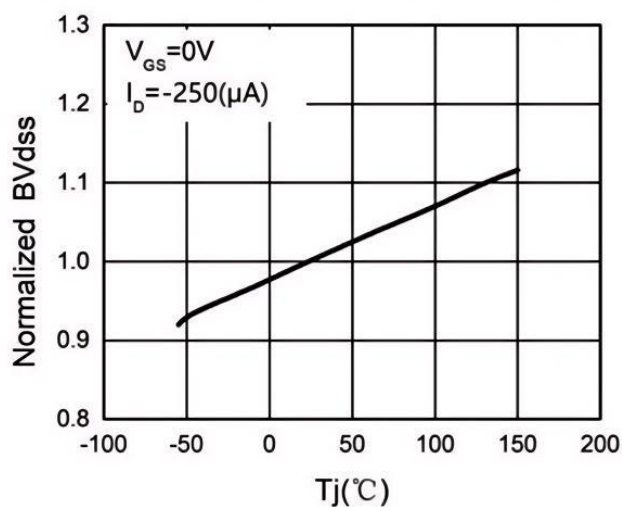


Fig.5 BV_{DS} vs Junction Temperature

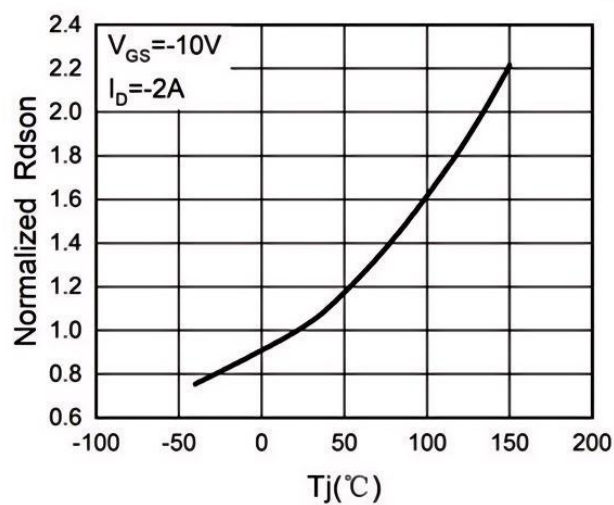


Fig.6 $R_{DS(on)}$ vs Junction Temperature

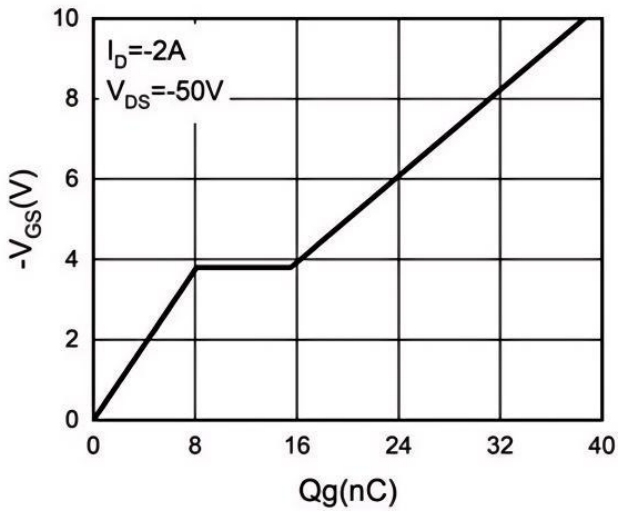


Fig.7 Gate Charge Waveforms

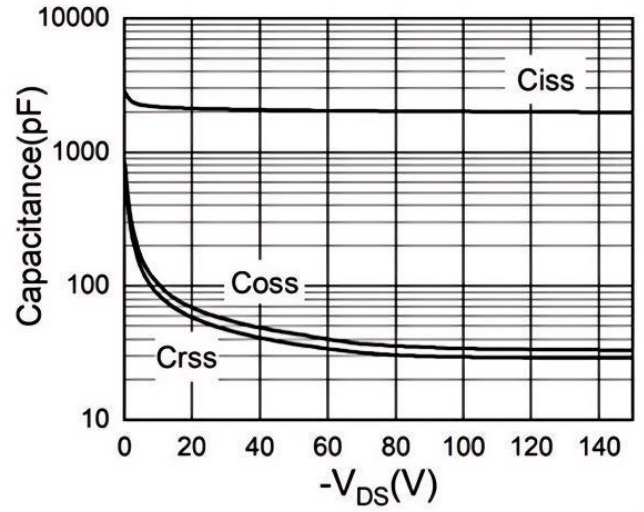


Fig.8 Capacitance

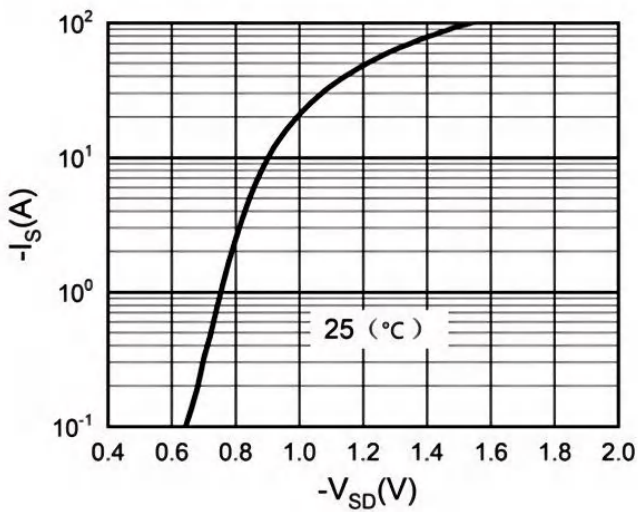


Fig.9 Body Diode Characteristics

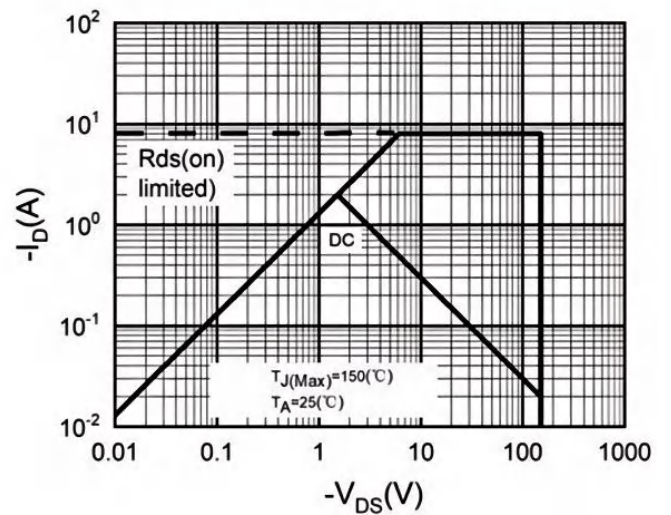
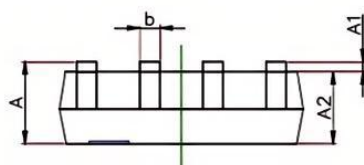
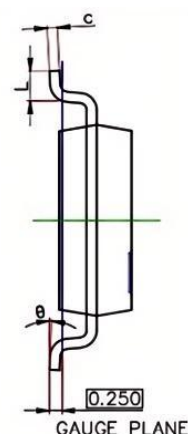
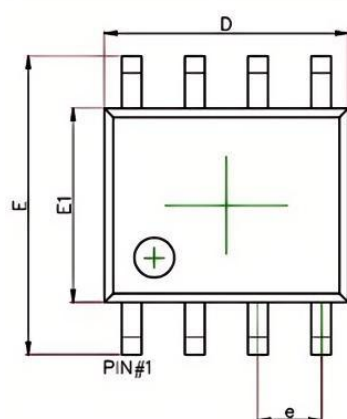


Fig.10 Maximum Safe Operating Area

Ordering Information

Part Number	Package code	Packaging
HSM05P15	SOP-8	2500/Tape&Reel

SOP-8 Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
C	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

HSM05P15 Marking:

