



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.

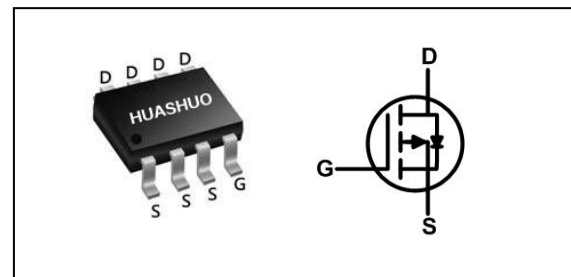
The HSM05P15 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

- 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 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-150	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-2A	---	290	345	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-2	-2.7	-4	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-150V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 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=1.0MHz	---	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 =3.3Ω, 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=1MHz	---	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°C	---	---	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-2A, di/dt=-100A/μs, T _J =25°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 2OZ copper.
- 2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 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

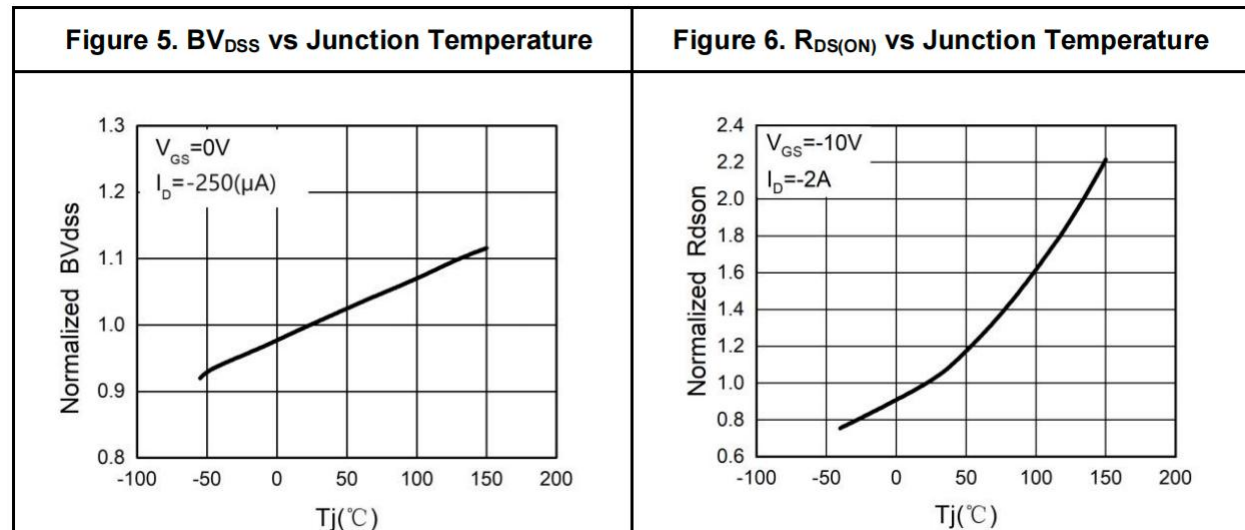
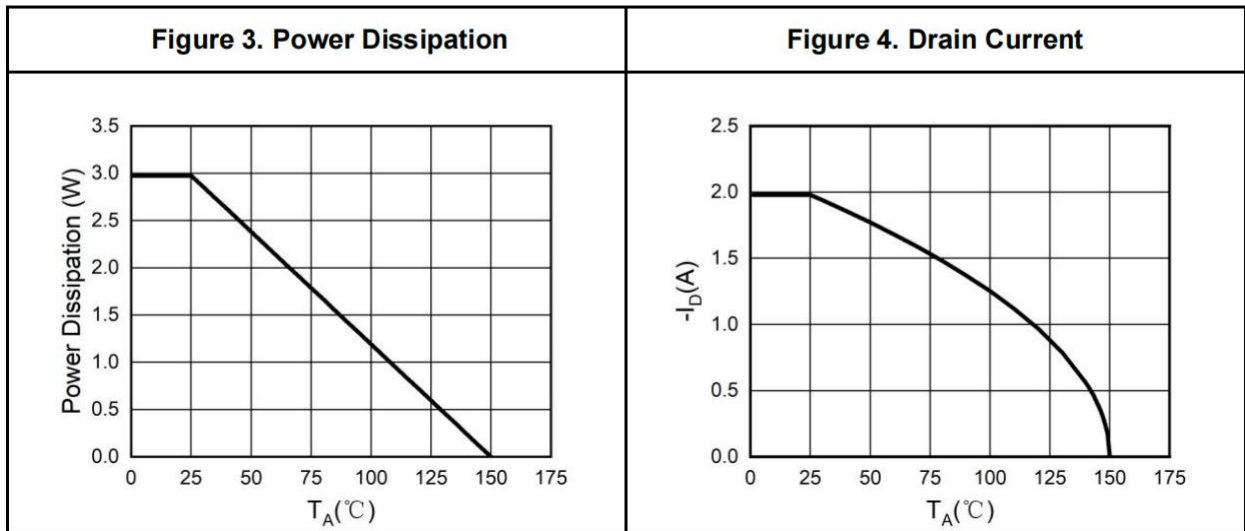
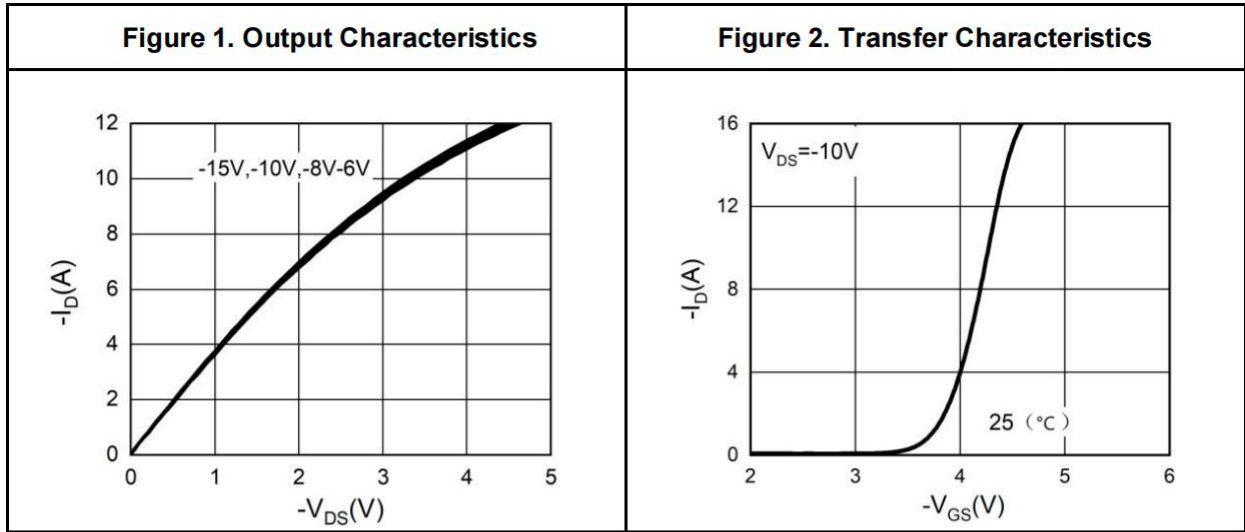




Figure 7. Gate Charge Waveforms

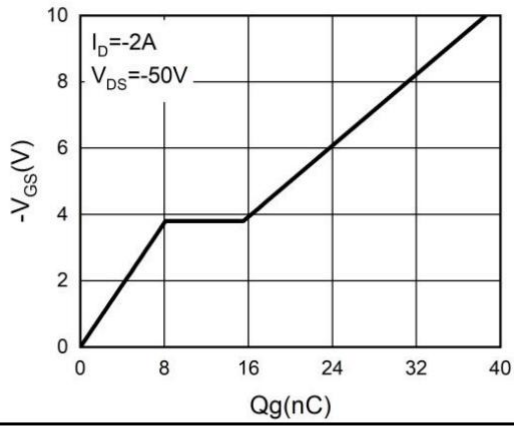


Figure 8. Capacitance

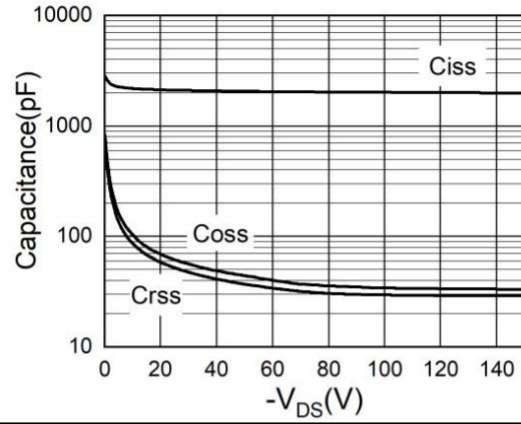


Figure 9. Body-Diode Characteristics

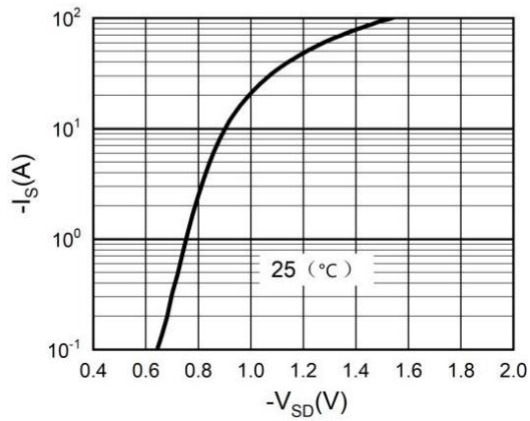
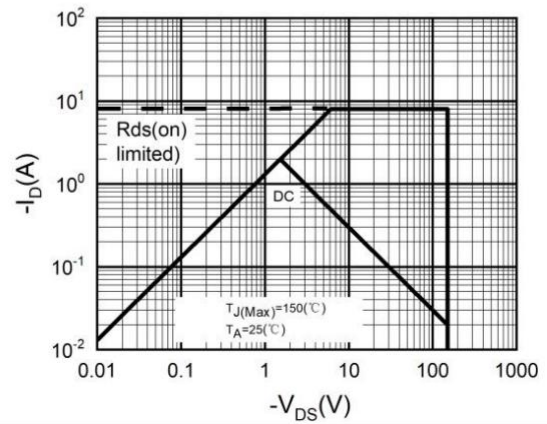


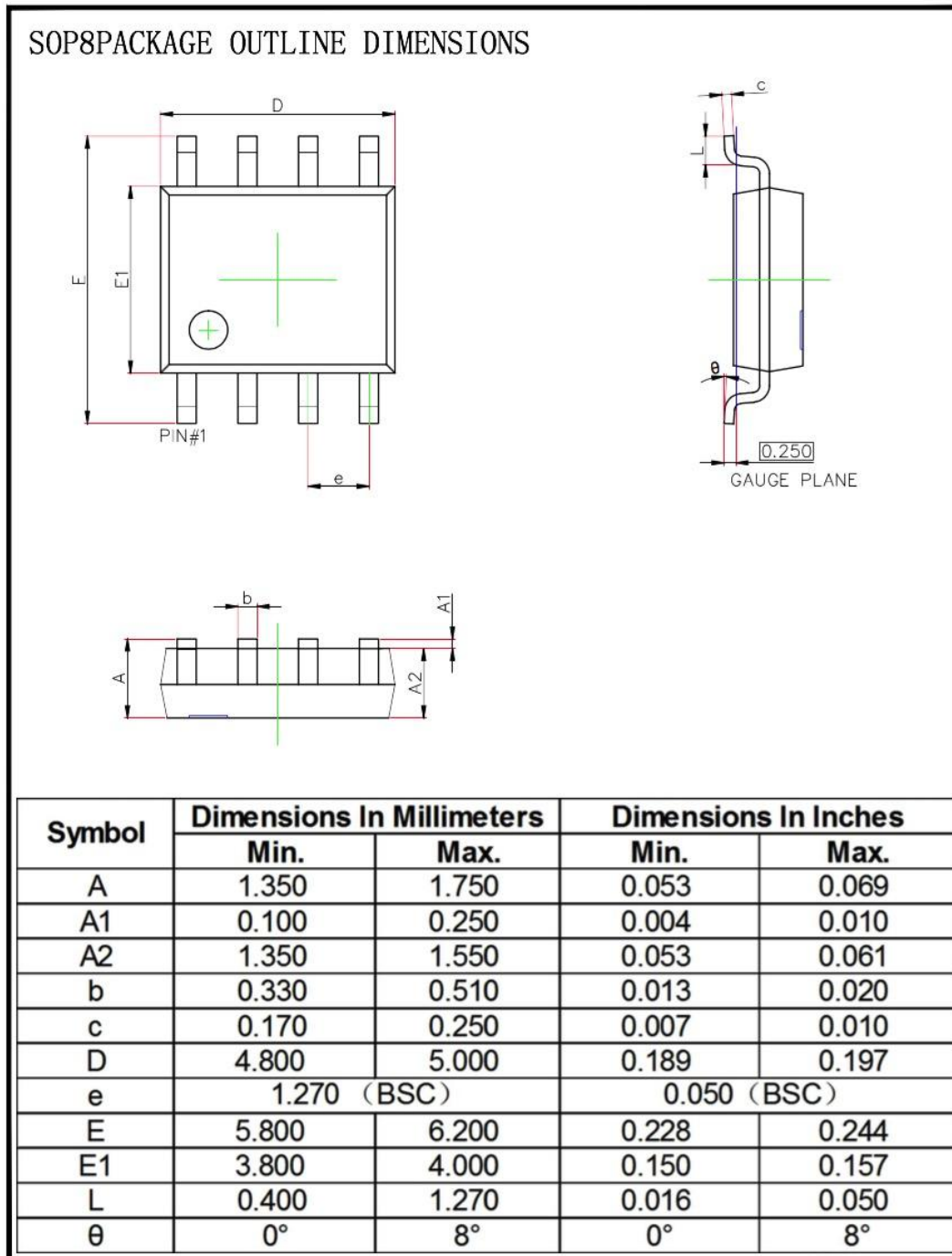
Figure 10. Maximum Safe Operating Area





Ordering Information

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



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