

General Description

The HSM0137 is the high cell density trench P-ch MOSFETs, which provide excellent $R_{DS(on)}$ and gate charge for most of the synchronous buck converter applications.

The HSM0137 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

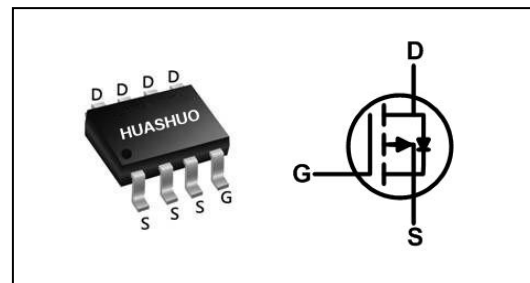
Features

- 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}	-100	V
$R_{DS(ON),typ}$	135	m Ω
I_D	-6	A

SOP8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-5	A
$I_D@T_C=70^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-2.6	A
I_{DM}	Pulsed Drain Current ¹	-22	A
EAS	Single Pulse Avalanche Energy ²	53	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	3.1	W
$P_D@T_C=100^\circ C$	Total Power Dissipation	1.6	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	---	61	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	17	$^\circ C/W$



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	-100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-3A	---	135	170	mΩ
		V _{GS} =-4.5V, I _D =-3A	---	140	195	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.2	-1.7	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-100V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-100V, V _{GS} =0V T _J =125°C	---	---	-100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-10A	---	26	---	S
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-50V, I _D =-20A	---	36	---	nC
Q _{gs}	Gate-Source Charge		---	5.5	---	
Q _{gd}	Gate-Drain Charge		---	6	---	
T _{d(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DS} =-50V, R _L =2.5Ω, R _{GEN} =3Ω	---	12	---	ns
T _r	Rise Time		---	17.6	---	
T _{d(off)}	Turn-Off Delay Time		---	48	---	
T _f	Fall Time		---	20	---	
C _{iss}	Input Capacitance	V _{DS} =-50V, V _{GS} =0V, f=1.0MHz	---	3060	---	pF
C _{oss}	Output Capacitance		---	60	---	
C _{rss}	Reverse Transfer Capacitance		---	50	---	

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 =-20A, dI/dt=100A/μs, T _J =25°C	---	25	---	nS
Q _{rr}	Reverse Recovery Charge		---	128	---	nC

Note :

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.E_{AS} condition: T_J=25°C, V_{DD}=50V, V_G=-10V, R_g=25Ω, L=0.5mH.

3.Repetitive Rating: Pulse width limited by maximum junction temperature.



Typical Characteristics

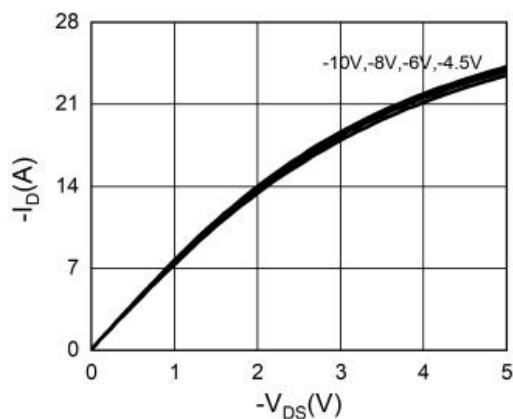


Figure 1. Output Characteristics

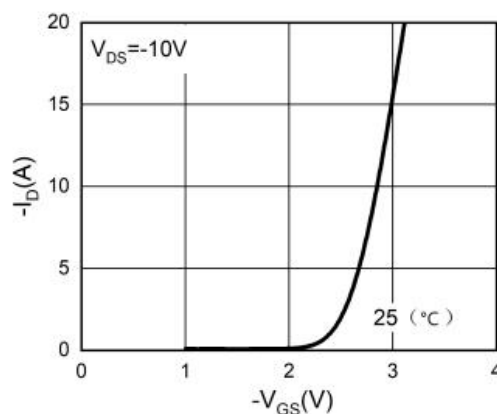


Figure 2. Transfer Characteristics

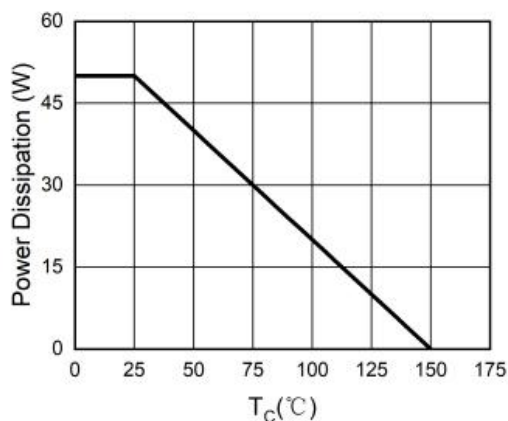


Figure 3. Power Dissipation

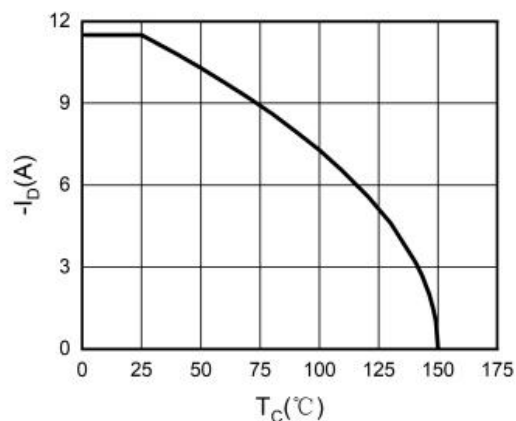


Figure 4. Drain Current

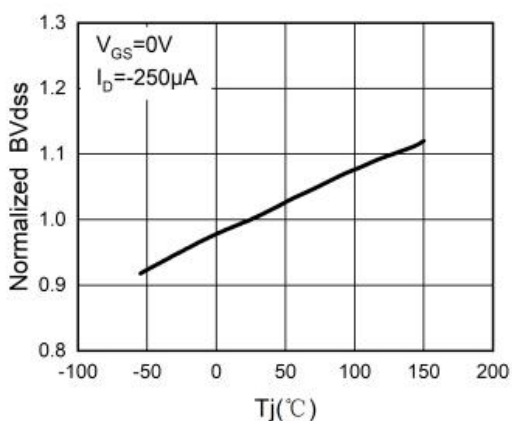


Figure 5. BV_{DS} vs Junction Temperature

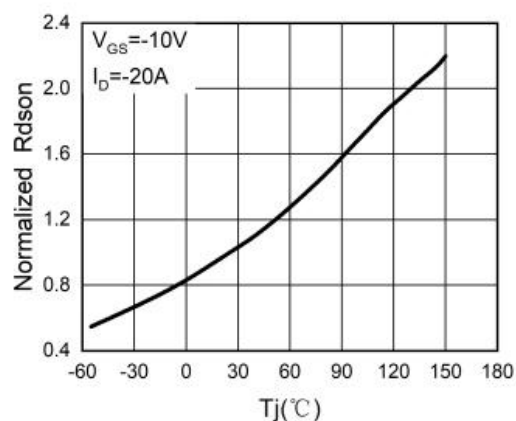


Figure 6. $R_{DS(on)}$ vs Junction Temperature

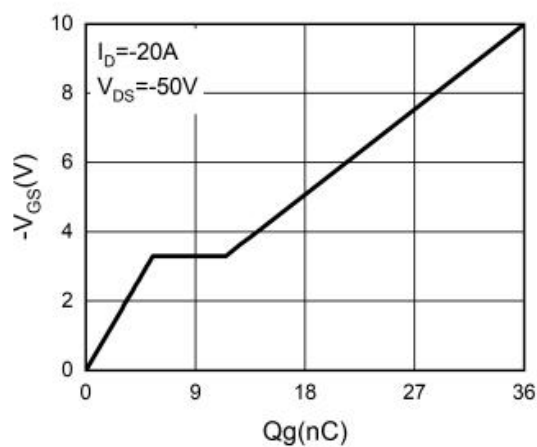


Figure 7. Gate Charge Waveforms

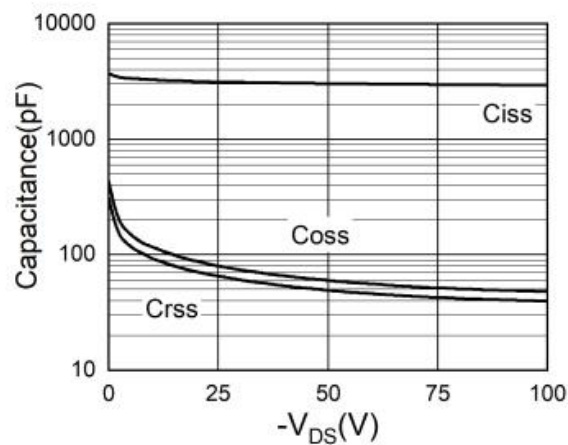


Figure 8. Capacitance

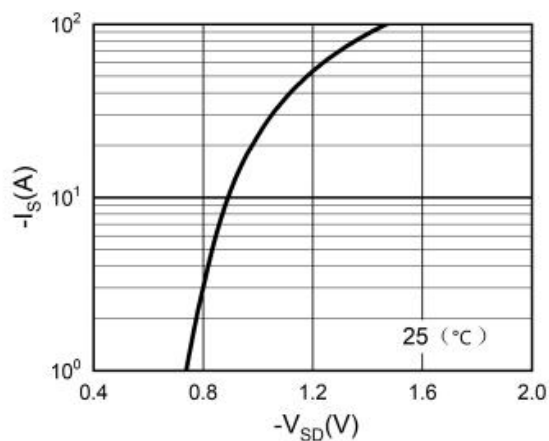


Figure 9. Body-Diode Characteristics

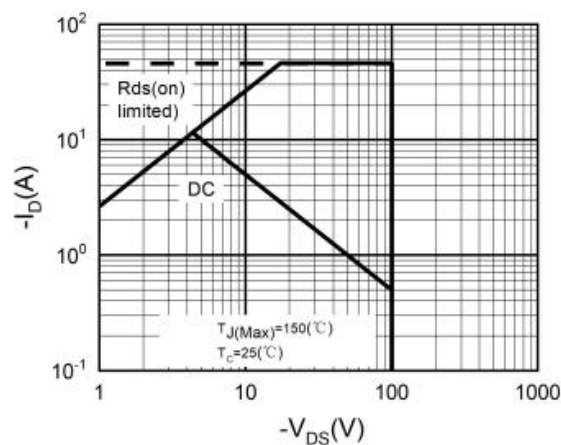


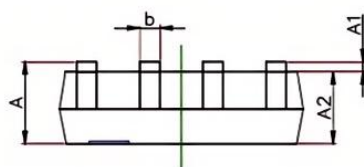
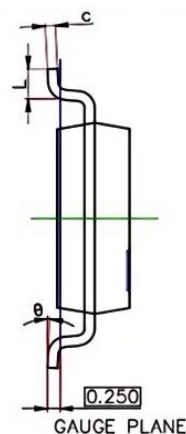
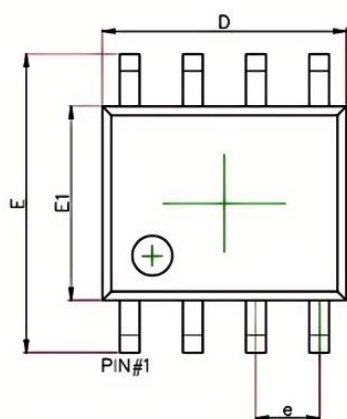
Figure 10. Maximum Safe Operating Area



Ordering Information

Part Number	Package code	Packaging
HSM0137	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°

HSM0137 Marking:

