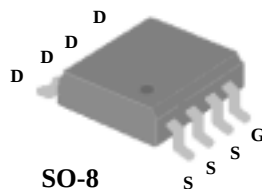


P-CHANNEL ENHANCEMENT MODE POWER MOSFET

Simple drive requirement

Low on-resistance

Fast switching



BV_{DSS} -30V

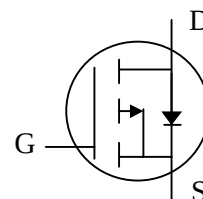
$R_{DS(ON)}$ 20m Ω

I_D -8A

Description

Power MOSFETs from Silicon Standard provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SO-8 package is widely preferred for commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current ³	-8	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current ³	-6	A
I_{DM}	Pulsed Drain Current ^{1,2}	-50	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2.5	W
	Linear Derating Factor	0.02	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
$R_{thj-amb}$	Thermal Resistance Junction-ambient Max.	50	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

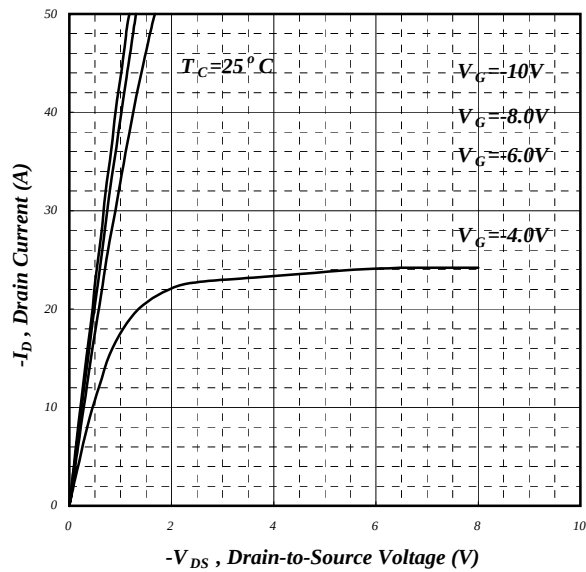
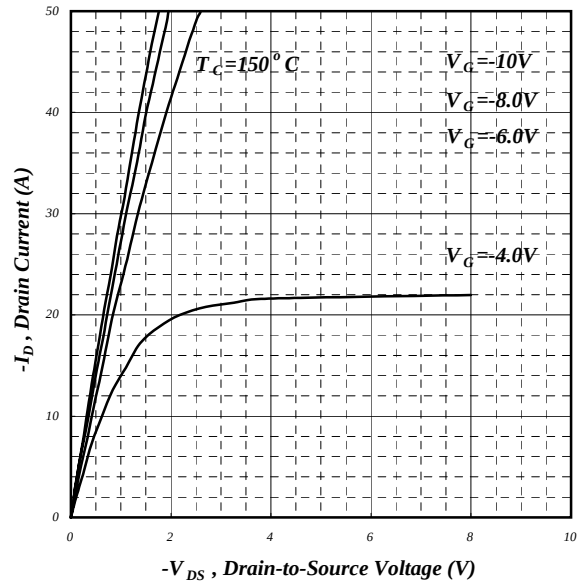
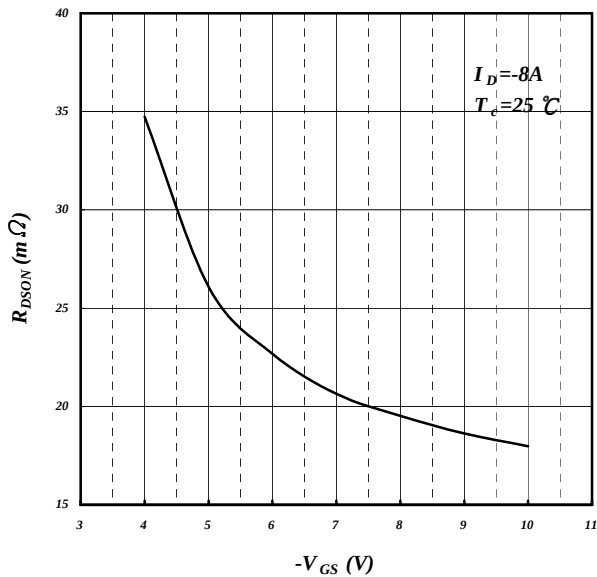
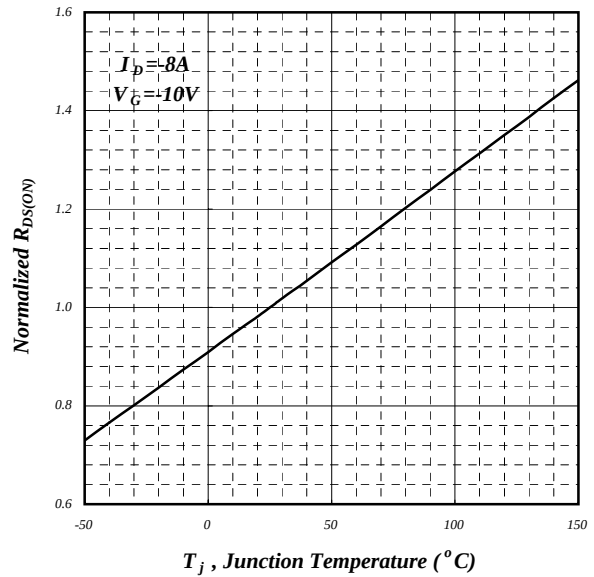
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =-1mA	-	-0.037	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-8A	-	-	20	mΩ
		V _{GS} =-4.5V, I _D =-5A	-	-	35	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1	-	-3	V
g _{fs}	Forward Transconductance	V _{DS} =-15V, I _D =-8A	-	20	-	S
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =-30V, V _{GS} =0V	-	-	-1	uA
	Drain-Source Leakage Current (T _j =70°C)	V _{DS} =-24V, V _{GS} =0V	-	-	-25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±25	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =-4.6A	-	36	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-15V	-	5.5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =-10V	-	3.5	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =-15V	-	12	-	ns
t _r	Rise Time	I _D =-1A	-	8	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =6Ω, V _{GS} =-10V	-	75	-	ns
t _f	Fall Time	R _D =15Ω	-	40	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1530	-	pF
C _{oss}	Output Capacitance	V _{DS} =-15V	-	900	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	280	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I _S	Continuous Source Current (Body Diode)	V _D =V _G =0V, V _S =-1.2V	-	-	-2.1	A
I _{SM}	Pulsed Source Current (Body Diode) ¹		-	-	-50	A
V _{SD}	Forward On Voltage ²	T _j =25°C, I _S =-2.1A, V _{GS} =0V	-	-0.75	-1.2	V

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width ≤300us, duty cycle ≤2%.
- 3.Surface mounted on FR4 board, t≤10 sec.


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

Fig 3. On-Resistance v.s. Gate Voltage

**Fig 4. Normalized On-Resistance
v.s. Junction Temperature**

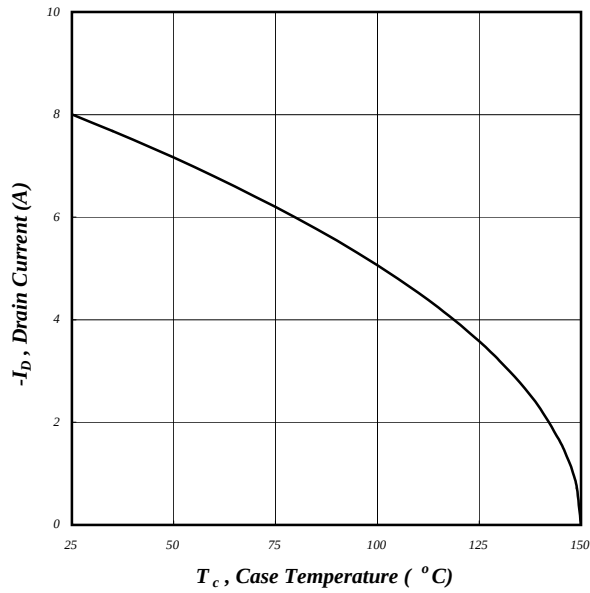


Fig 5. Maximum Drain Current v.s. Case Temperature

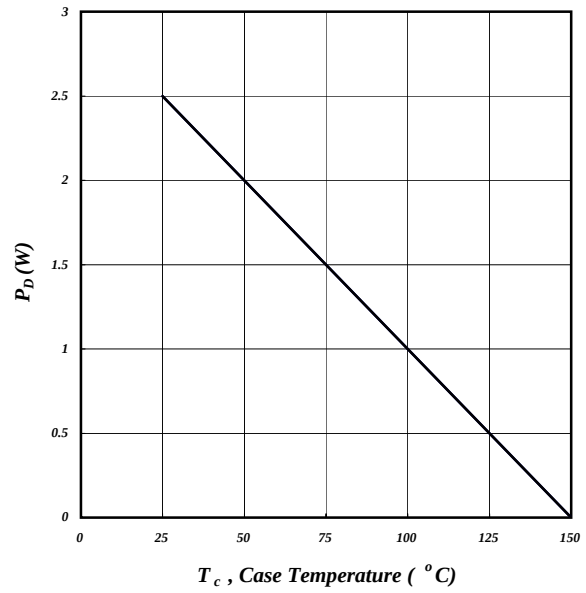


Fig 6. Typical Power Dissipation

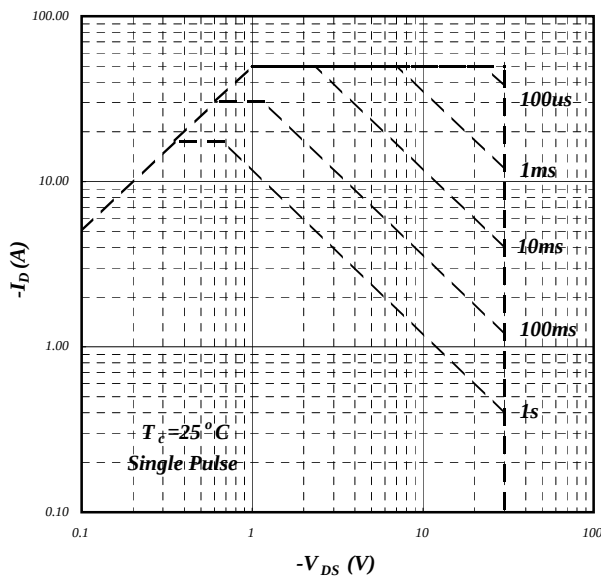


Fig 7. Maximum Safe Operating Area

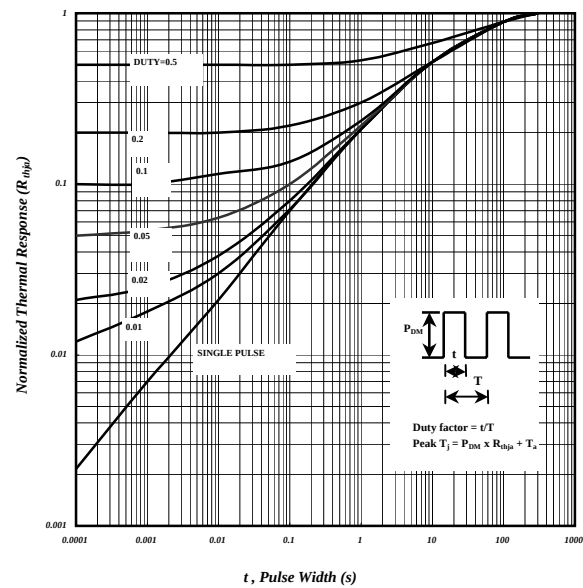
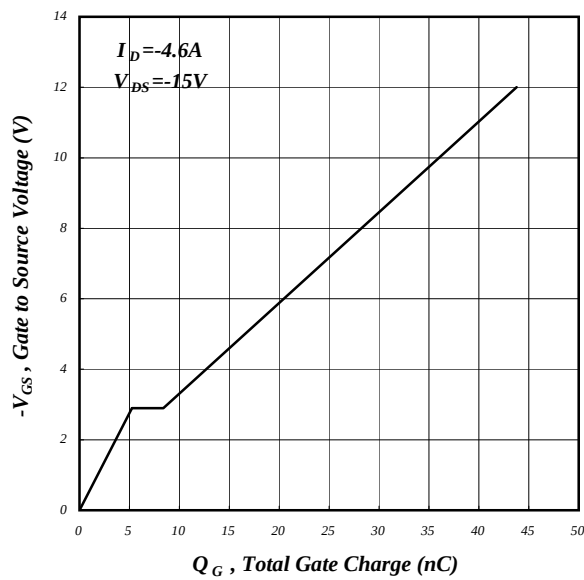
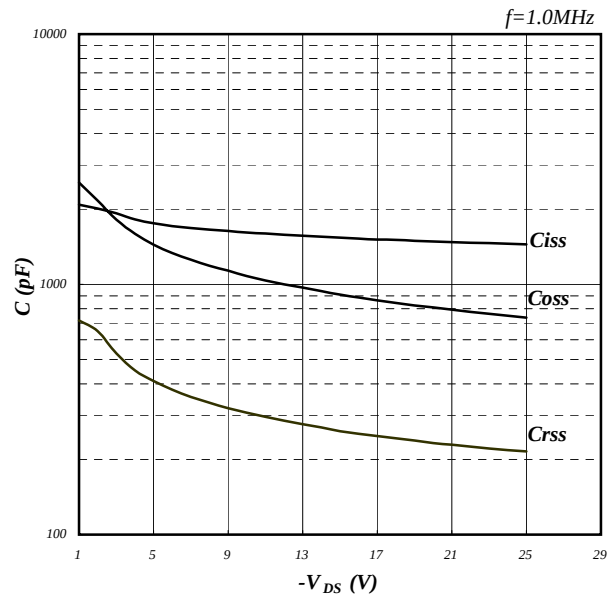
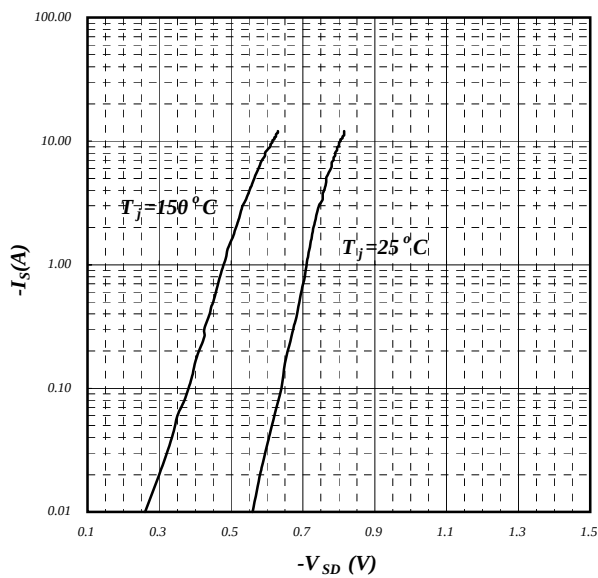
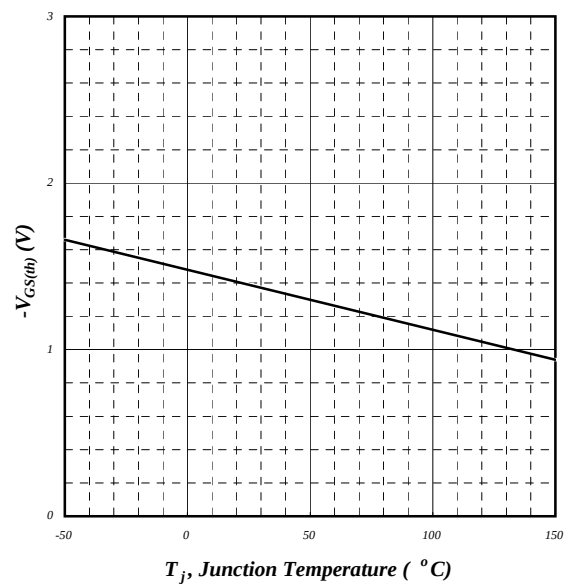


Fig 8. Effective Transient Thermal Impedance


Fig 9. Gate Charge Characteristics

Fig 10. Typical Capacitance Characteristics

Fig 11. Forward Characteristic of Reverse Diode

Fig 12. Gate Threshold Voltage v.s. Junction Temperature

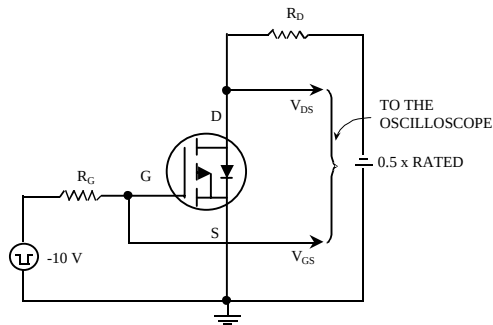


Fig 13. Switching Time Circuit

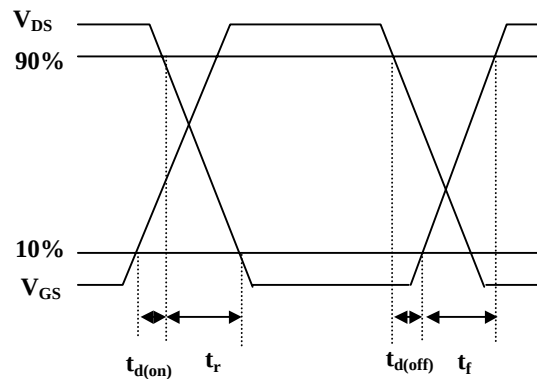


Fig 14. Switching Time Waveform

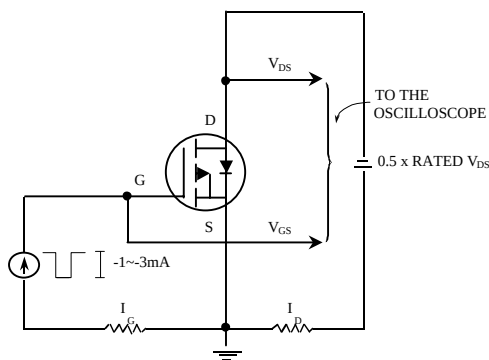


Fig 15. Gate Charge Circuit

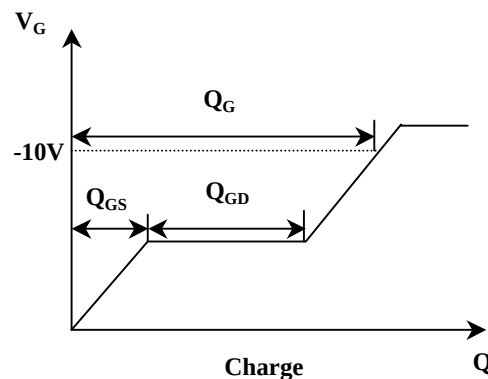


Fig 16. Gate Charge Waveform

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