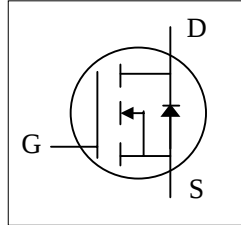


N-CHANNEL ENHANCEMENT MODE POWER MOSFET

PRODUCT SUMMARY

Simple Drive Requirement
Low On-resistance
Fast Switching Characteristic

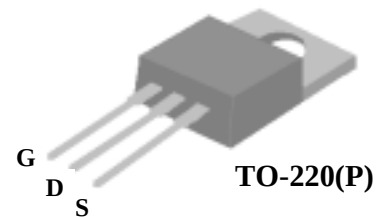
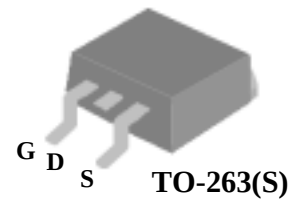


BV_{DSS}	80V
$R_{DS(ON)}$	13m Ω
I_D	75A

DESCRIPTION

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

The TO-263 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (SSM85T08GP) are available for low-profile applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	75	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	48	A
I_{DM}	Pulsed Drain Current ¹	260	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	138	W
	Linear Derating Factor	1.11	W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ³	450	mJ
I_{AR}	Avalanche Current	30	A
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	Units
Rthj-c	Thermal Resistance Junction-case	Max. 0.9	$^\circ\text{C}/\text{W}$
Rthj-a	Thermal Resistance Junction-ambient	Max. 62	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS

@T_J=25 °C (unless otherwise specified)

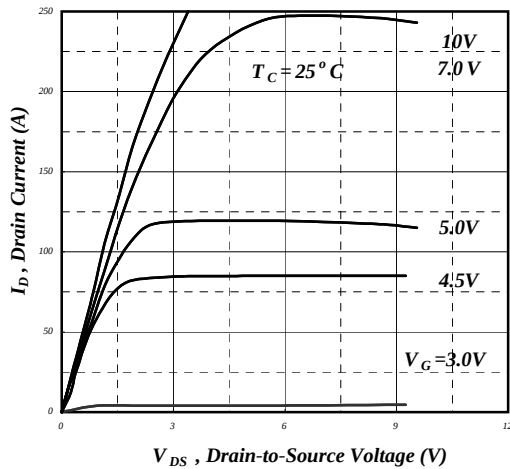
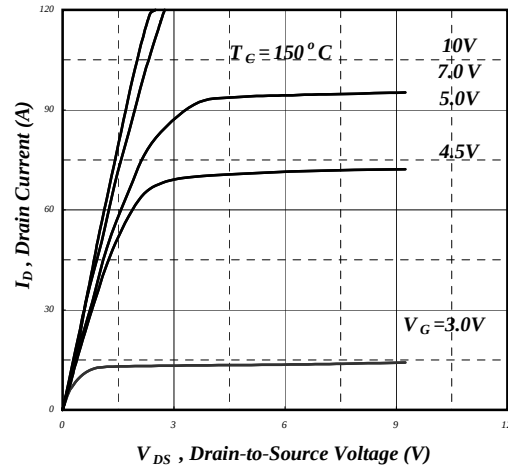
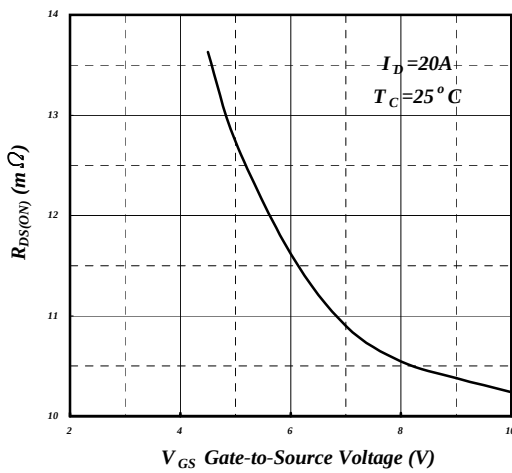
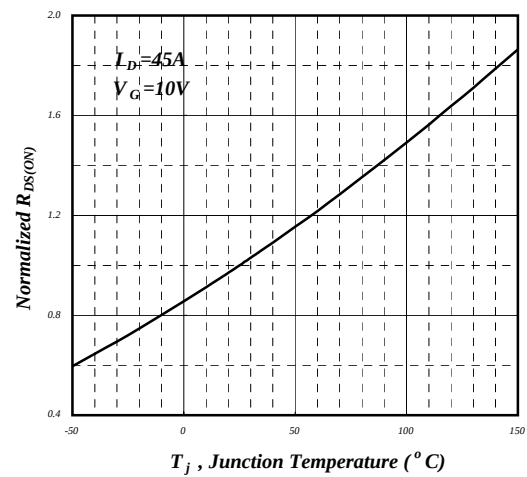
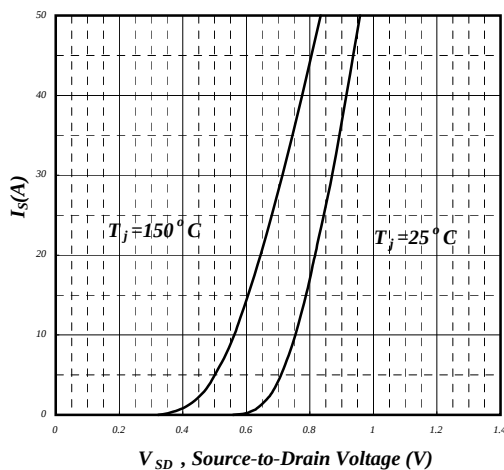
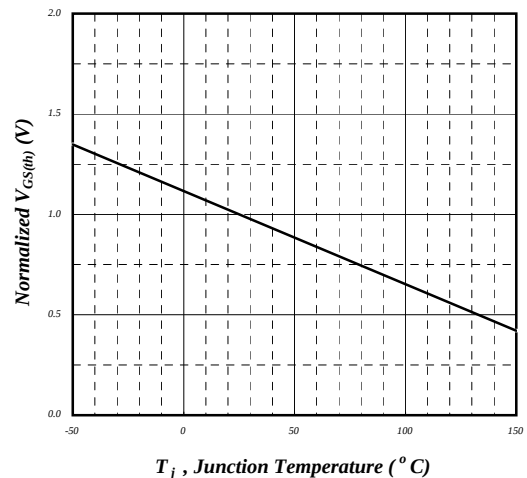
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =1mA	80	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.09	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =45A	-	-	13	mΩ
		V _{GS} =4.5V, I _D =25A	-	-	18	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =45A	-	70	-	S
I _{DSS}	Drain-Source Leakage Current (T _J =25°C)	V _{DS} =80V, V _{GS} =0V	-	-	10	uA
	Drain-Source Leakage Current (T _J =150°C)	V _{DS} =64V, V _{GS} =0V	-	-	100	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±20V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =45A	-	63	100	nC
Q _{gs}	Gate-Source Charge	V _{DS} =64V	-	23	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	38	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =40V	-	30	-	ns
t _r	Rise Time	I _D =45A	-	100	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =10Ω, V _{GS} =10V	-	144	-	ns
t _f	Fall Time	R _D =0.89Ω	-	173	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	6300	10080	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	670	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	350	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.1	1.7	Ω

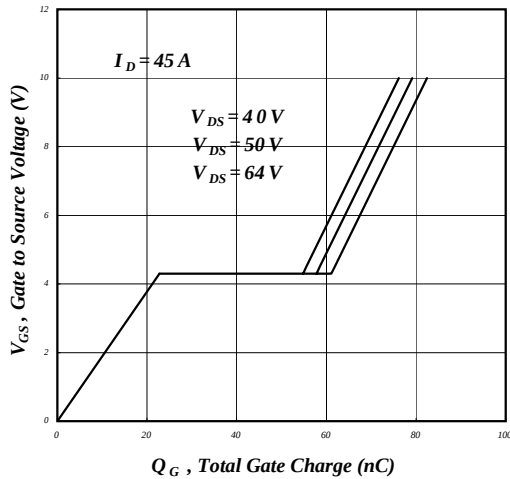
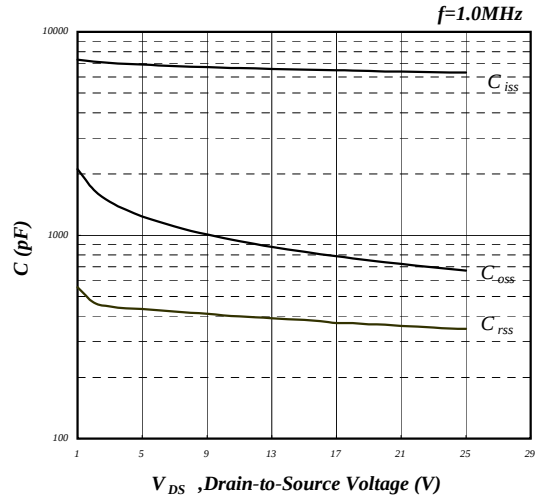
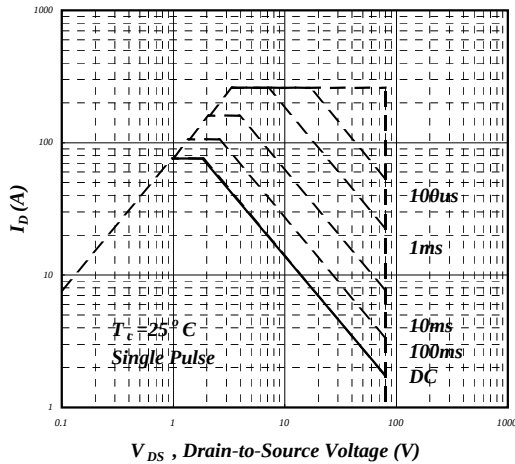
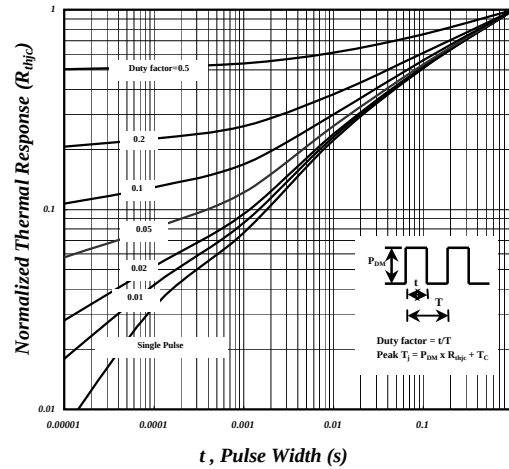
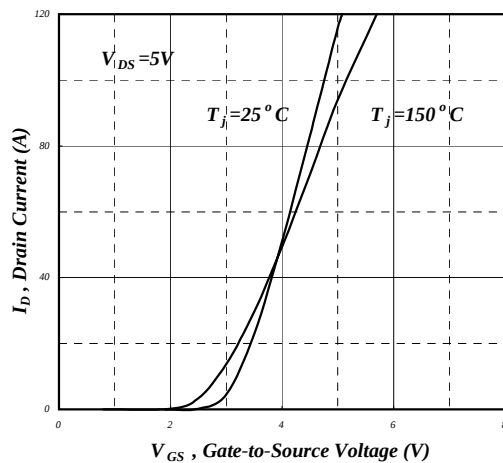
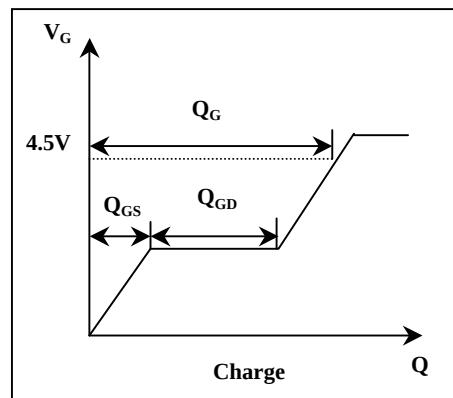
Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =45A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time ²	I _S =20A, V _{GS} =0V	-	47	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	86	-	nC

Notes:

- 1.Pulse width limited by safe operating area.
- 2.Pulse width ≤300us , duty cycle ≤2%.
- 3.Starting T_J=25°C , V_{DD}=30V , L=1mH , R_G=25Ω , I_{AS}=30A.


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. Forward Characteristic of
Reverse Diode**

**Fig 6. Gate Threshold Voltage v.s.
Junction Temperature**


Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics

Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Transfer Characteristics

Fig 12. Gate Charge Waveform

Information furnished by Silicon Standard Corporation is believed to be accurate and reliable. However, Silicon Standard Corporation makes no guarantee or warranty, expressed or implied, as to the reliability, accuracy, timeliness or completeness of such information and assumes no responsibility for its use, or for infringement of any patent or other intellectual property rights of third parties that may result from its use. Silicon Standard reserves the right to make changes as it deems necessary to any products described herein for any reason, including without limitation enhancement in reliability, functionality or design. No license is granted, whether expressly or by implication, in relation to the use of any products described herein or to the use of any information provided herein, under any patent or other intellectual property rights of Silicon Standard Corporation or any third parties.