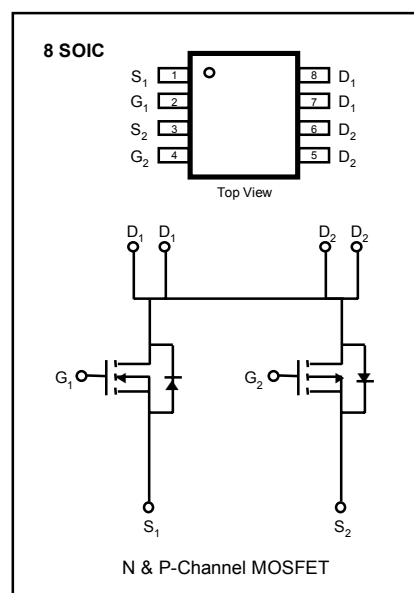


FEATURES

- Lower $R_{DS(ON)}$
- Improved Inductive Ruggedness
- Fast Switching Times
- Low Input Capacitance
- Extended Safe Operating Area
- Improved High Temperature Reliability

Product Summary

SSD2006	BVdss	Rds(on)	I _D
N-Channel	30V	0.05Ω	5.4A
P-Channel	-30V	0.10Ω	-3.8A



Absolute Maximum Ratings

Symbol	Characteristic	N-Channel	P-Channel	Units
V _{DSS}	Drain-to-Source Voltage	30	-30	V
I _D	Continuous Drain Current T _A =25℃	5.4	-3.8	A
	Continuous Drain Current T _A =70℃	4.3	-3.0	
I _{DM}	Drain Current-Pulsed ①	14.0	-14.0	A
V _{GS}	Gate-to-Source Voltage	±20	±20	V
P _D	Total Power Dissipation (T _A =25℃)	2.4		W
	(T _A =70℃)	1.5		
T _J , T _{STG}	Operating and Junction Storage Temperature Range	- 55 to +150		℃

Thermal Resistance

Symbol	Characteristic	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient	--	52	$^\circ\text{C/W}$

(N-Channel)

Electrical Characteristics (T_C=25°C unless otherwise specified)

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
B _V DSS	Drain-Source Breakdown Voltage	30	--	--	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	Gate Threshold Voltage	1.0	--	--	V	V _{DS} =5V, I _D =250μA
I _{GSS}	Gate-Source Leakage, Forward	--	--	100	nA	V _{GS} =20V
	Gate-Source Leakage, Reverse	--	--	-100	nA	V _{GS} =-20V
I _{DSS}	Drain-to-Source Leakage Current	--	--	1.0	μA	V _{DS} =24V
		--	--	5.0		V _{DS} =15V, T _C =70°C
I _{DON}	On-State Drain-Source Current	14	--	--	A	V _{DS} =5V, V _{GS} =10V
R _{DS(on)}	Static Drain-Source	--	0.031	0.05	Ω	V _{GS} =10V, I _D =3.5A
	On-State Resistance ②	--	0.042	0.08		V _{GS} =4.5V, I _D =2.5A
g _{fs}	Forward Transconductance ②	--	8.0	--	S	V _{DS} =15V, I _D =3.5A
t _{d(on)}	Turn-On Delay Time	--	16	30	ns	V _{DD} =15V, I _D =1.0A, R _θ =6.0Ω, ②③
t _r	Rise Time	--	18	40		
t _{d(off)}	Turn-Off Delay Time	--	38	50		
t _f	Fall Time	--	24	50		
Q _g	Total Gate Charge	--	18	35	nC	V _{DS} =10V, V _{GS} =10V, I _D =3.5A ②③
Q _{gs}	Gate-Source Charge	--	3.5	--		
Q _{gd}	Gate-Drain(" Miller ") Charge	--	3.5	--		

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
I _S	Continuous Source Current (Body Diode)	--	--	1.7	A	Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier 
V _{SD}	Diode Forward Voltage ②	--	--	1.2	V	T _A =25°C, I _S =1.7A, V _{GS} =0V
t _{rr}	Reverse Recovery Time ②	--	70	120	ns	T _A =25°C, I _F =3.5A, di _F /dt=100A/μs

Notes ;

- ① Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature
- ② Pulse Test : Pulse Width = 250μs, Duty Cycle ≤ 2%
- ③ Essentially Independent of Operating Temperature

(P-Channel)

Electrical Characteristics (T_C=25°C unless otherwise specified)

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
B _V DSS	Drain-Source Breakdown Voltage	-30	--	--	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	Gate Threshold Voltage	-1.0	--	--	V	V _{DS} = -5V, I _D =-250μA
I _{GSS}	Gate-Source Leakage , Forward	--	--	-100	nA	V _{GS} =-20V
	Gate-Source Leakage , Reverse	--	--	100	nA	V _{GS} =20V
I _{DSS}	Drain-to-Source Leakage Current	--	--	-1.0	μA	V _{DS} =-24V
		--	--	-5.0		V _{DS} =-15V, T _C =70°C
I _{DON}	On-State Drain-Source Current	-14	--	--	A	V _{DS} =-5V, V _{GS} =-10V
R _{DS(on)}	Static Drain-Source	--	0.08	0.1	Ω	V _{GS} =-10V, I _D =-3.5A
	On-State Resistance ②	--	0.11	0.16		V _{GS} =-4.5V, I _D =-2.0A
g _{fs}	Forward Transconductance ②	--	5.0	--	Ω	V _{DS} =-15V, I _D =-3.5A
t _{d(on)}	Turn-On Delay Time	--	17	30	ns	V _{DD} =-15V, I _D =-1.0A, R _θ =6.0Ω, ②③
t _r	Rise Time	--	17	40		
t _{d(off)}	Turn-Off Delay Time	--	33	50		
t _f	Fall Time	--	19	50		
Q _g	Total Gate Charge	--	17	35	nC	V _{DS} =-10V, V _{GS} =-10V, I _D =-3.5A ②③
Q _{gs}	Gate-Source Charge	--	3.6	--		
Q _{gd}	Gate-Drain(" Miller ") Charge	--	4.3	--		

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
I _S	Continuous Source Current (Body Diode)	--	--	-1.7	A	Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier 
V _{SD}	Diode Forward Voltage ②	--	--	-1.2	V	T _A =25°C, I _S =-1.7A, V _{GS} =0V
t _{rr}	Reverse Recovery Time ②	--	40	100	ns	T _A =25°C, I _F =-3.5A, di _F /dt=100A/μs

Notes ;

- ① Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature
- ② Pulse Test : Pulse Width = 250μs, Duty Cycle ≤ 2%
- ③ Essentially Independent of Operating Temperature

(N-Channel)

Fig 1. Output Characteristics

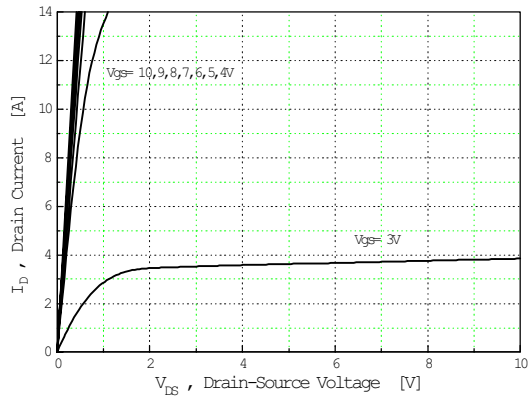


Fig 2. Transfer Characteristics

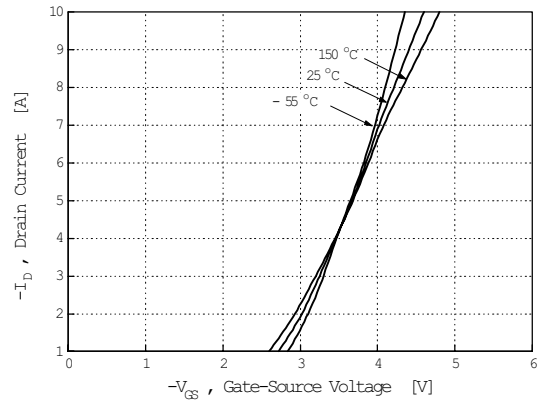


Fig 3. On-Resistance vs. Drain Current

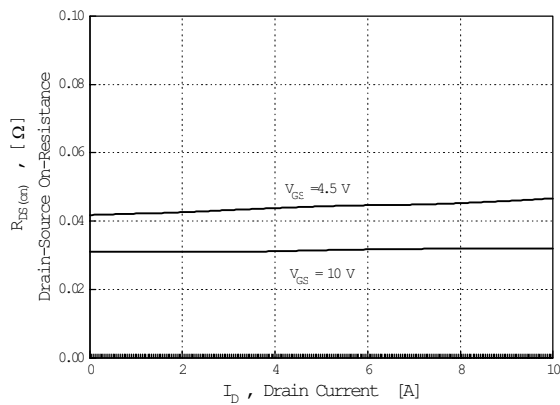


Fig 4. Source-Drain Forward Voltage

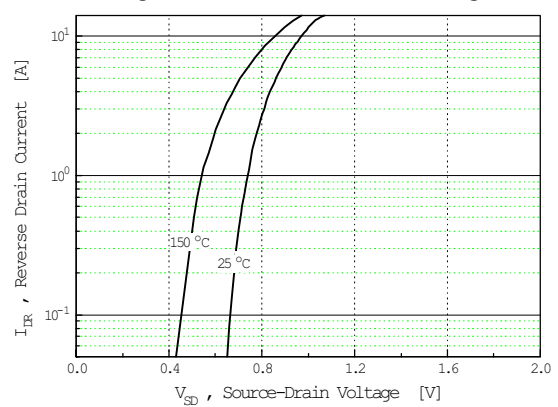


Fig 5. Capacitance vs. Drain-Source Voltage

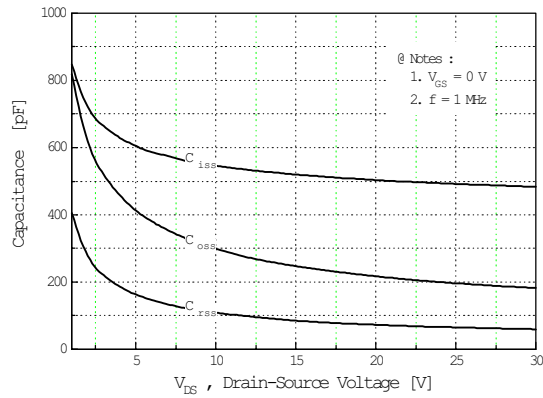
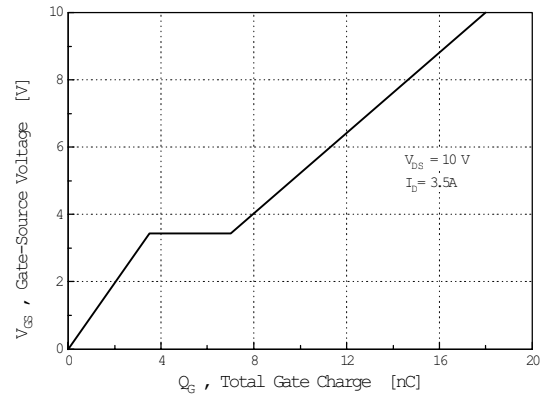


Fig 6. Gate Charge vs. Gate-Source Voltage



(N-Channel)

Fig 7. Breakdown Voltage vs. Temperature

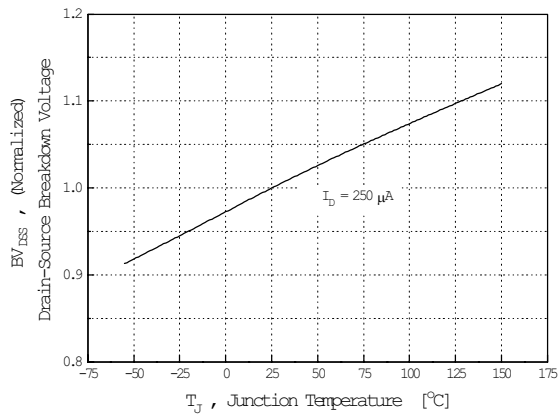


Fig 8. On-Resistance vs. Temperature

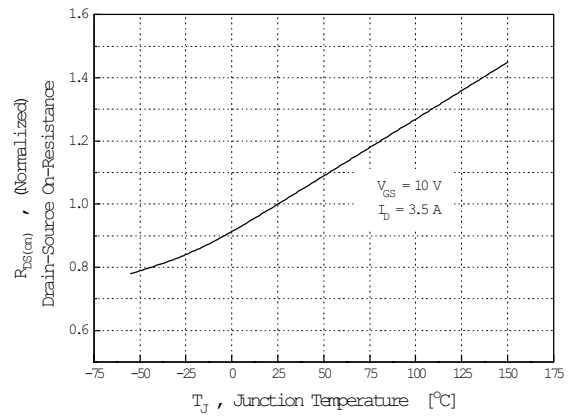
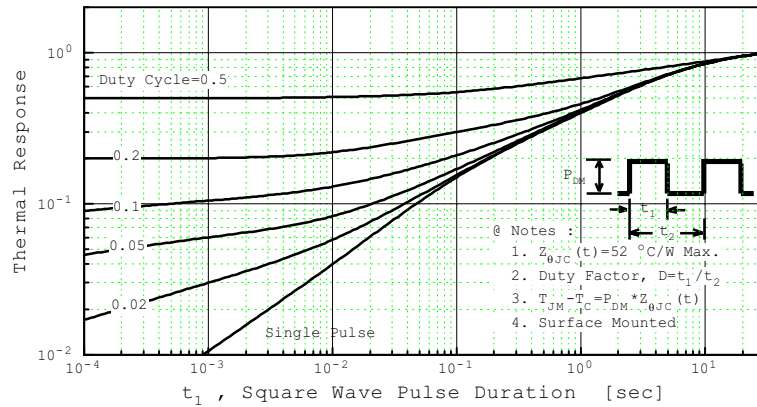


Fig 9. Normalized Effective Transient Thermal Impedance, Junction-to-Ambient



(P-Channel)

Fig 1. Output Characteristics

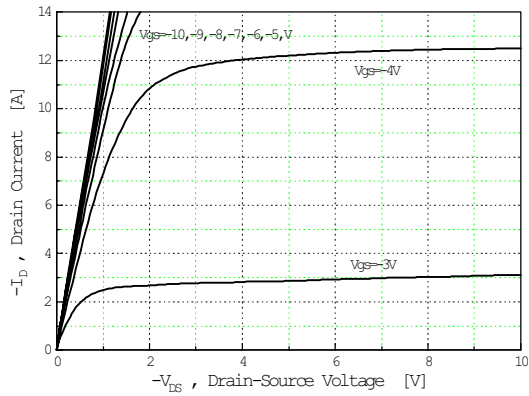


Fig 2. Transfer Characteristics

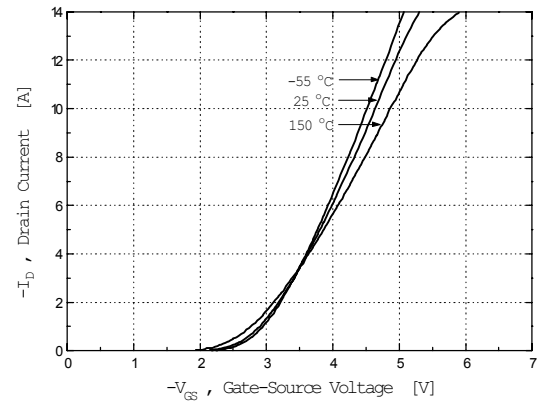


Fig 3. On-Resistance vs. Drain Current

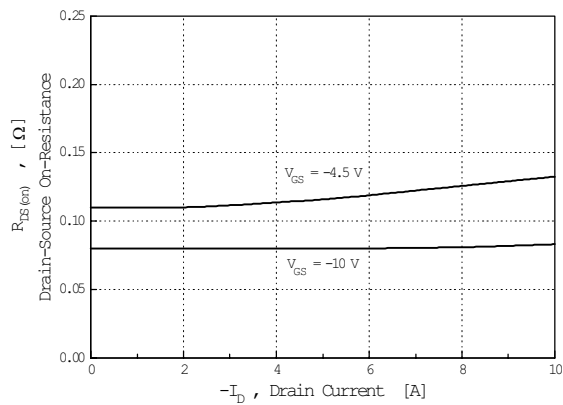


Fig 4. Source-Drain Forward Voltage

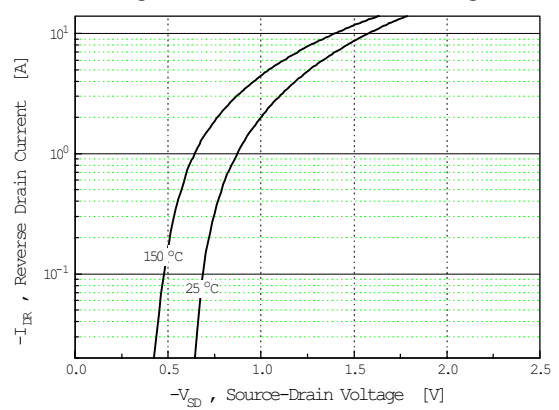


Fig 5. Capacitance vs. Drain-Source Voltage

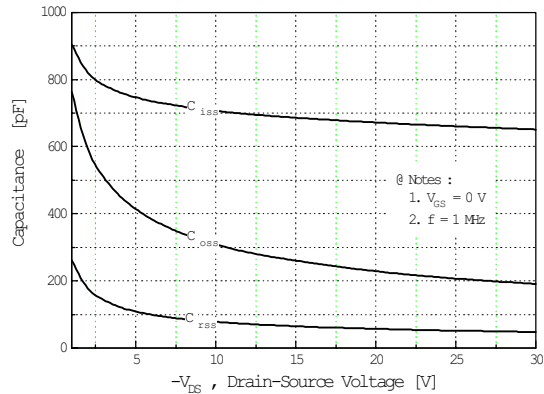
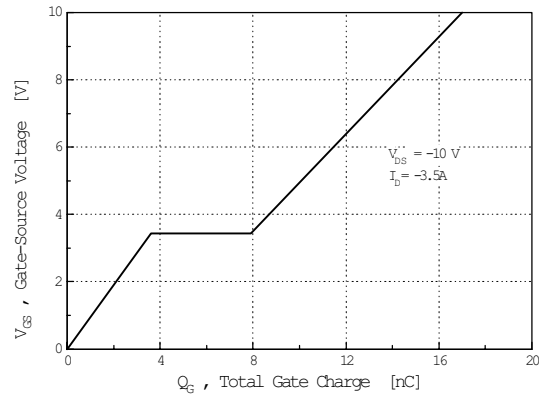


Fig 6. Gate Charge vs. Gate-Source Voltage



(P-Channel)

Fig 7. Breakdown Voltage vs. Temperature

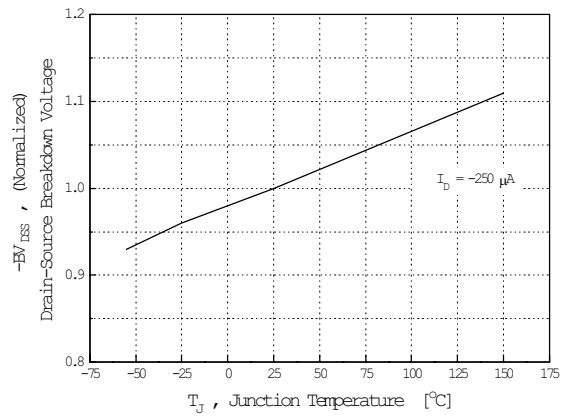


Fig 8. On-Resistance vs. Temperature

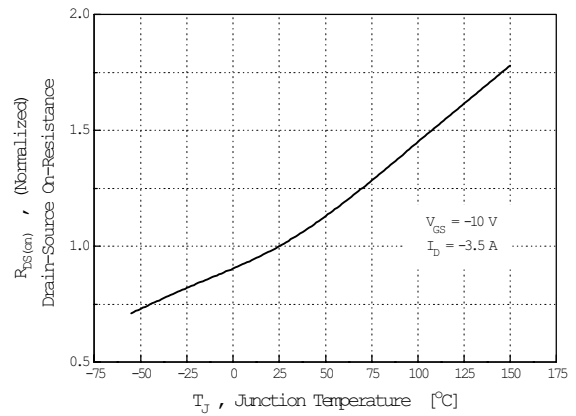


Fig 9. Normalized Effective Transient Thermal Impedance, Junction-to-Ambient

