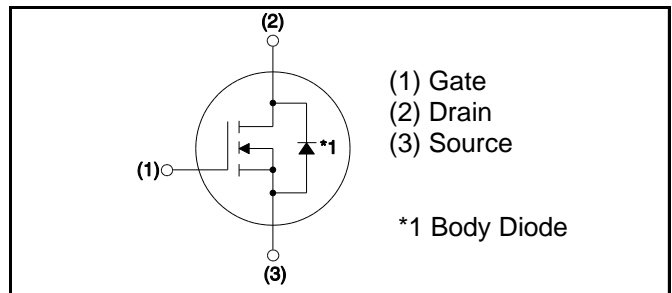


V_{DSS}	1700V
$R_{DS(on)}$ (Typ.)	100m Ω
I_D	34A ^{*1}

●Features

- 1) Low on-resistance
- 2) Fast switching speed
- 3) Fast reverse recovery
- 4) Easy to parallel
- 5) Simple to drive

●Inner circuit



●Application

- Solar inverters
- DC/DC converters
- Switch mode power supplies
- Induction heating
- Motor drives

●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Drain - Source voltage	V_{DSS}	1700	V
Continuous drain current	I_D ^{*1}	34	A
Pulsed drain current	$I_{D,pulse}$ ^{*2}	80	A
Gate - Source voltage (DC)	V_{GSS}	-6 to 22	V
Gate - Source surge voltage ($t_{surge} < 300\text{nsec}$)	$V_{GSS,surge}$ ^{*3}	-10 to 26	V
Junction temperature	T_j	175	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55 to +175	$^\circ\text{C}$

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Drain - Source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 1mA	1700	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 1700V, V _{GS} = 0V	-	1	10	μA
		T _j = 25°C	-	2	-	
Gate - Source leakage current	I _{GSS+}	V _{GS} = +22V, V _{DS} = 0V	-	-	100	nA
Gate - Source leakage current	I _{GSS-}	V _{GS} = -6V, V _{DS} = 0V	-	-	-100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 4.7mA	1.6	2.8	4.0	V
Static drain - source on - state resistance	R _{DS(on)} ^{*4}	V _{GS} = 18V, I _D = 13A	-	100	125	mΩ
		T _j = 25°C	-	145	-	
Gate input resistance	R _G	f = 1MHz, open drain	-	9	-	Ω

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Transconductance	g_{fs}^{*4}	V _{DS} = 10V, I _D = 13A	-	4.2	-	S
Input capacitance	C _{iss}	V _{GS} = 0V	-	2250	-	pF
Output capacitance	C _{oss}	V _{DS} = 800V	-	72	-	
Reverse transfer capacitance	C _{rss}	f = 1MHz	-	13	-	
Effective output capacitance, energy related	C _{o(er)}	V _{GS} = 0V V _{DS} = 0V to 800V	-	90	-	pF
Turn - on delay time	$t_{d(on)}^{*4}$	V _{DD} = 500V, I _D = 13A	-	26	-	ns
Rise time	t_r^{*4}	V _{GS} = 18V/0V	-	40	-	
Turn - off delay time	$t_{d(off)}^{*4}$	R _L = 38.5Ω	-	82	-	
Fall time	t_f^{*4}	R _G = 0Ω	-	30	-	
Turn - on switching loss	E _{on} ^{*4,5}	V _{DD} = 800V, I _D =20A V _{GS} = 18V/0V	-	953	-	μJ
Turn - off switching loss	E _{off} ^{*4,5}	R _G = 0Ω, L=500μH *E _{on} includes diode reverse recovery	-	70	-	

●Gate Charge characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Total gate charge	Q _g ^{*4}	V _{DD} = 500V	-	106	-	nC
Gate - Source charge	Q _{gs} ^{*4}	I _D = 13A	-	30	-	
Gate - Drain charge	Q _{gd} ^{*4}	V _{GS} = 18V	-	33	-	
Gate plateau voltage	V _(plateau)	V _{DD} = 500V, I _D = 13A	-	11	-	V

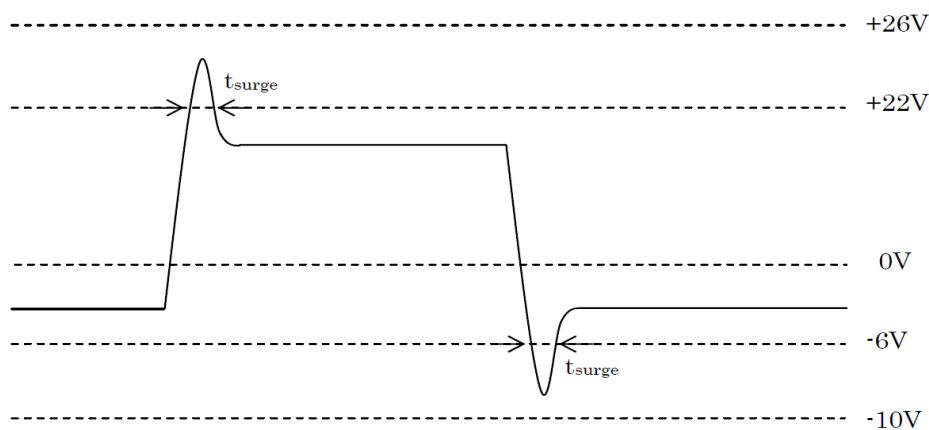
●Body diode electrical characteristics (Source-Drain) ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Inverse diode continuous, forward current	I_S *1	$T_c = 25^\circ\text{C}$	-	-	34	A
Inverse diode direct current, pulsed	I_{SM} *2		-	-	80	A
Forward voltage	V_{SD} *4	$V_{GS} = 0\text{V}, I_S = 13\text{A}$	-	4.5	-	V
Reverse recovery time	t_{rr} *4,5	$I_F = 13\text{A}, V_R = 600\text{V}$ $di/dt = 780\text{A}/\mu\text{s}$	-	36	-	ns
Reverse recovery charge	Q_{rr} *4,5		-	150	-	nC
Peak reverse recovery current	I_{rrm} *4,5		-	6.2	-	A

*1 For $T_j=175^\circ\text{C}$ and thermal dissipation to ambience of 262W or more.
Limited only by maximum temperature allowed.

*2 $PW \leq 10\mu\text{s}$, Duty cycle $\leq 1\%$

*3 Example of acceptable V_{gs} waveform



*4 Pulsed

*5 Measured using ROHM E-type power module with Kelvin source.

●Electrical characteristic curves

Fig.1 Typical Output Characteristics(I)

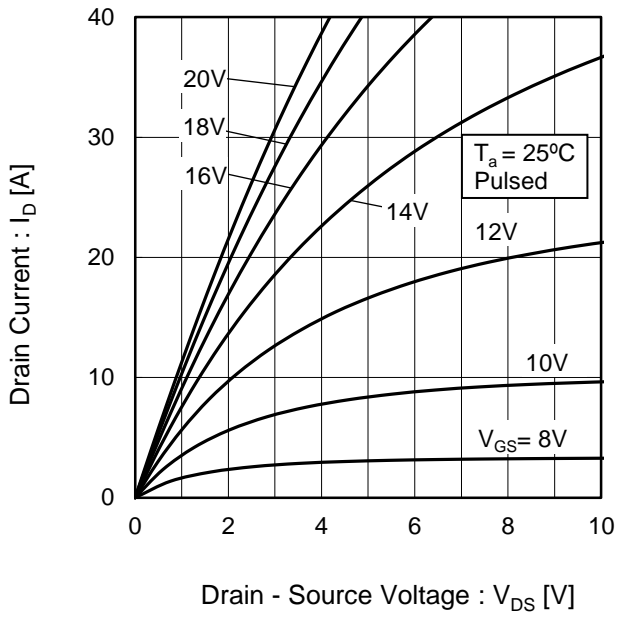


Fig.2 Typical Output Characteristics(II)

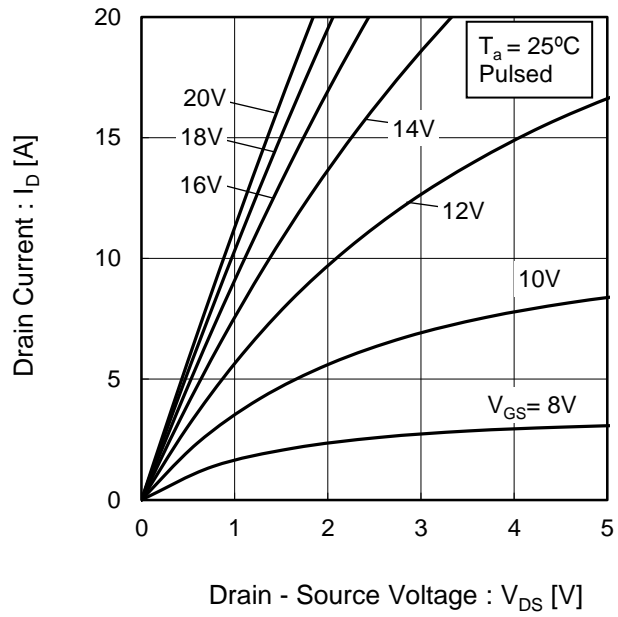


Fig.3 $T_j = 150^\circ\text{C}$ Typical Output Characteristics(I)

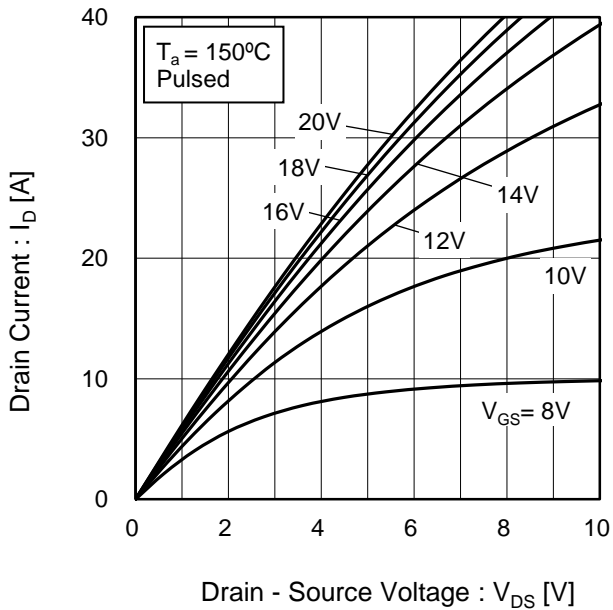
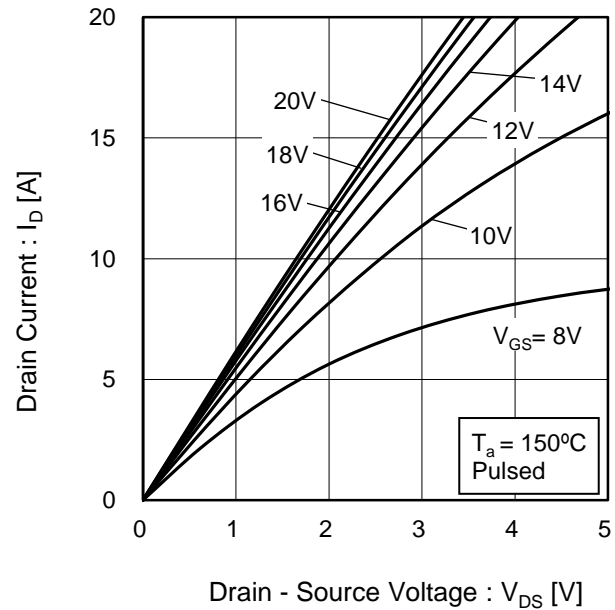


Fig.4 $T_j = 150^\circ\text{C}$ Typical Output Characteristics(II)



●Electrical characteristic curves

Fig.5 Typical Transfer Characteristics (I)

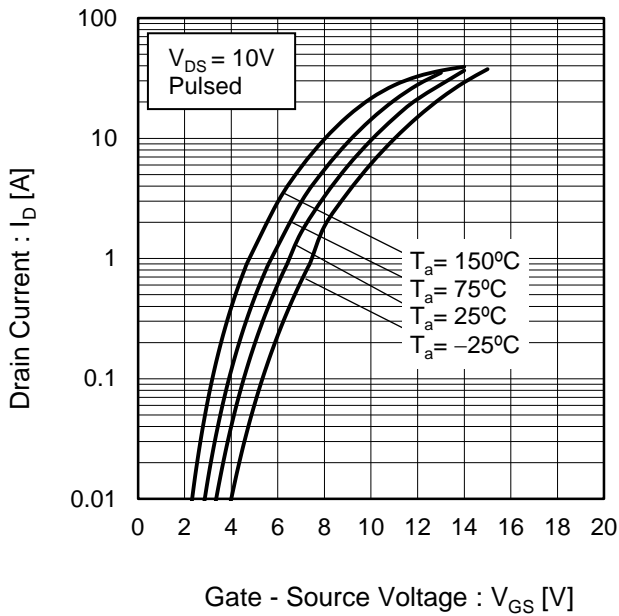


Fig.6 Typical Transfer Characteristics (II)

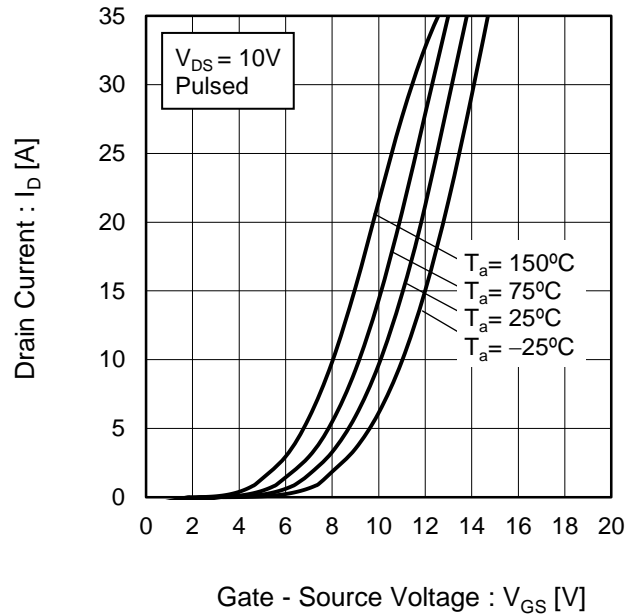


Fig.7 Gate Threshold Voltage vs. Junction Temperature

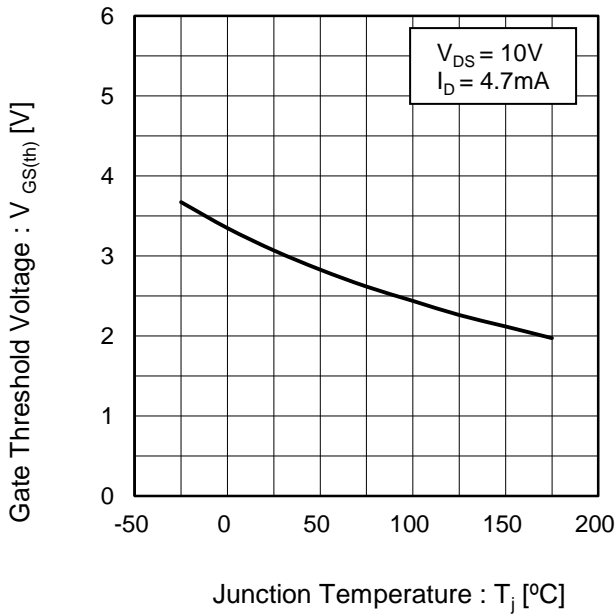
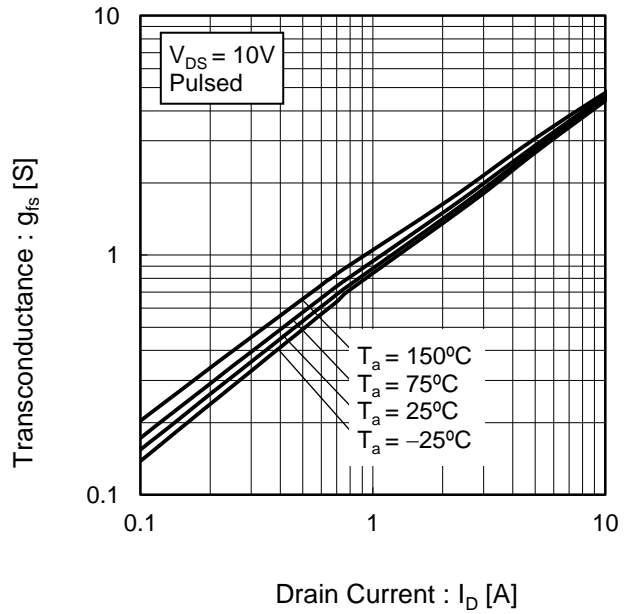


Fig.8 Transconductance vs. Drain Current



●Electrical characteristic curves

Fig.9 Static Drain - Source On - State Resistance vs. Gate - Source Voltage

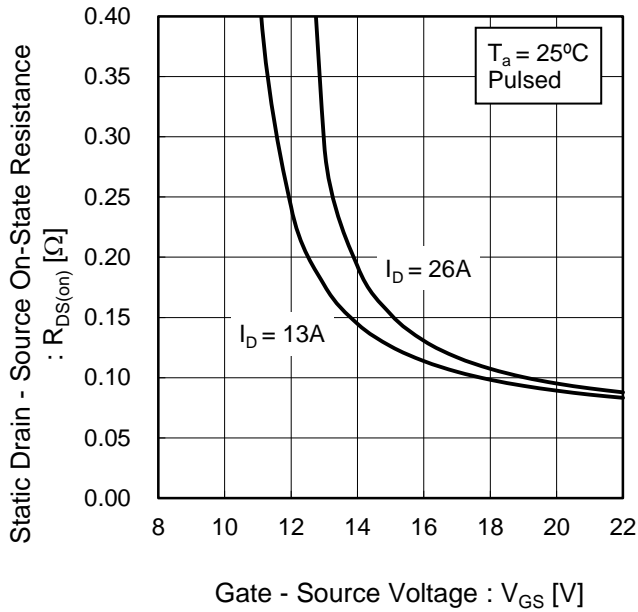


Fig.10 Static Drain - Source On - State Resistance vs. Junction Temperature

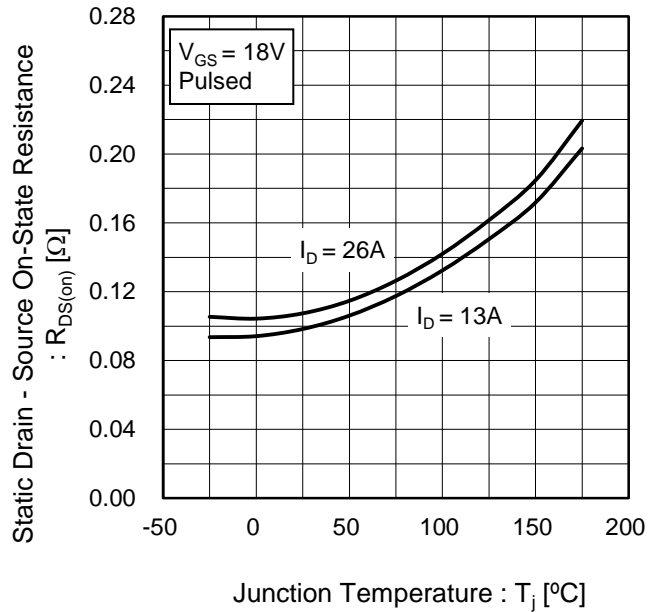
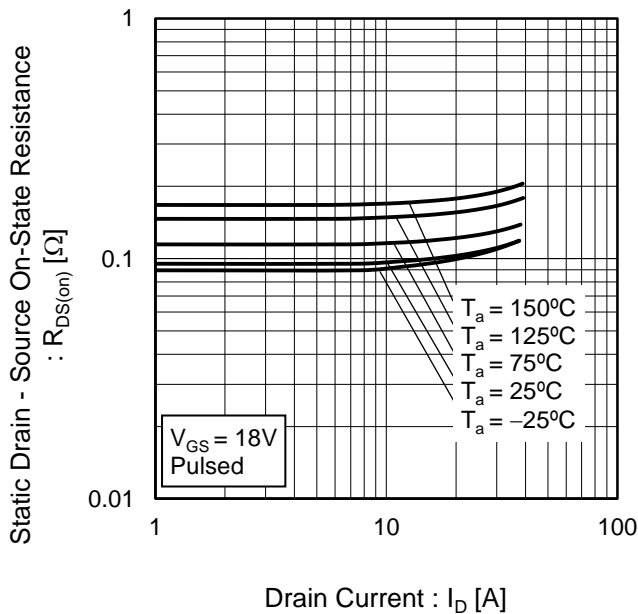


Fig.11 Static Drain - Source On - State Resistance vs. Drain Current



●Electrical characteristic curves

Fig.12 Typical Capacitance vs. Drain - Source Voltage

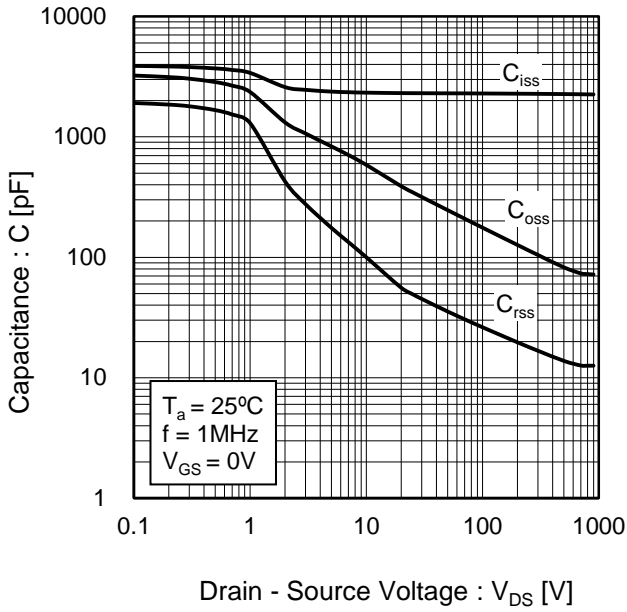


Fig.13 Coss Stored Energy

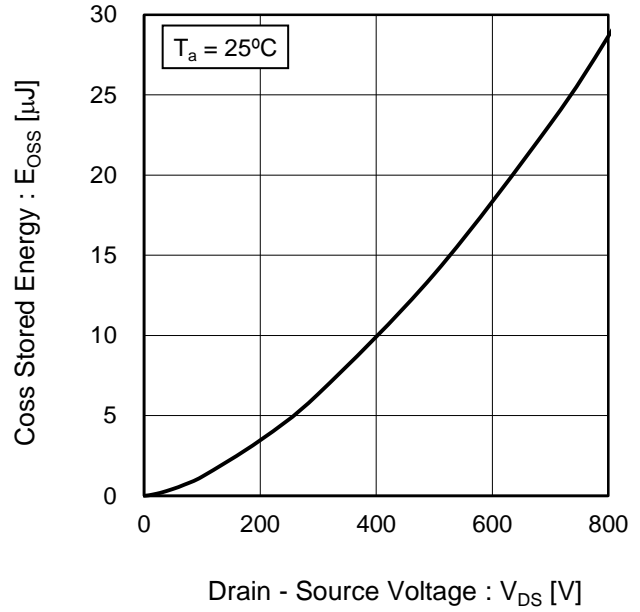


Fig.14 Switching Characteristics

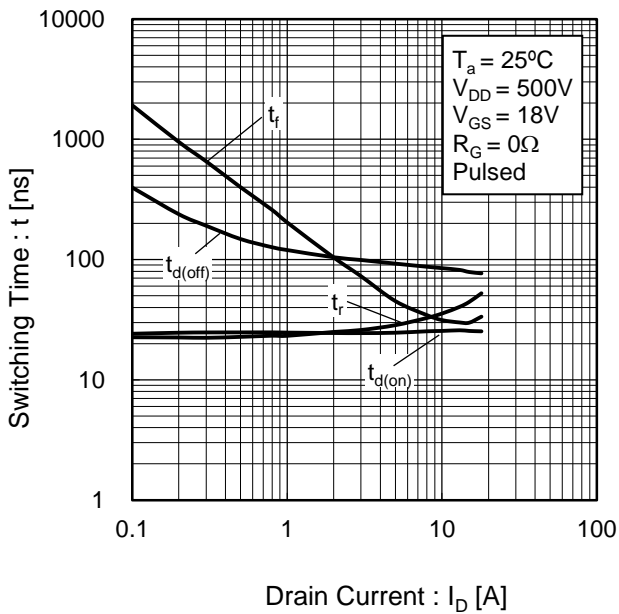
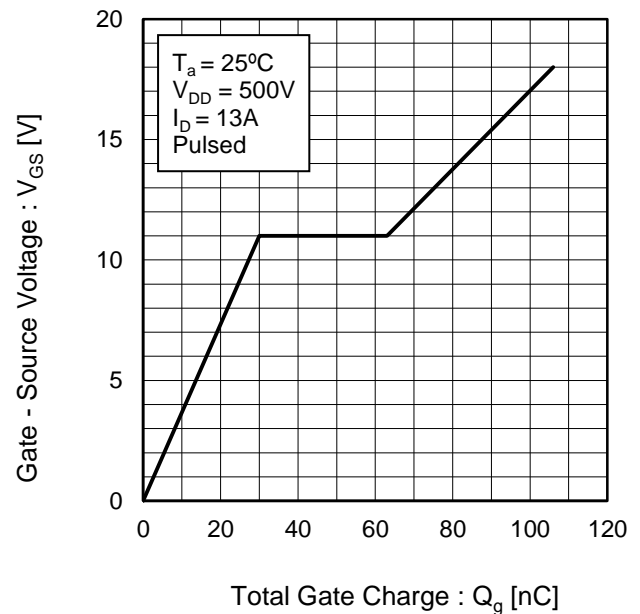


Fig.15 Dynamic Input Characteristics



●Electrical characteristic curves

Fig.16 Typical Switching Loss vs. Drain - Source Voltage

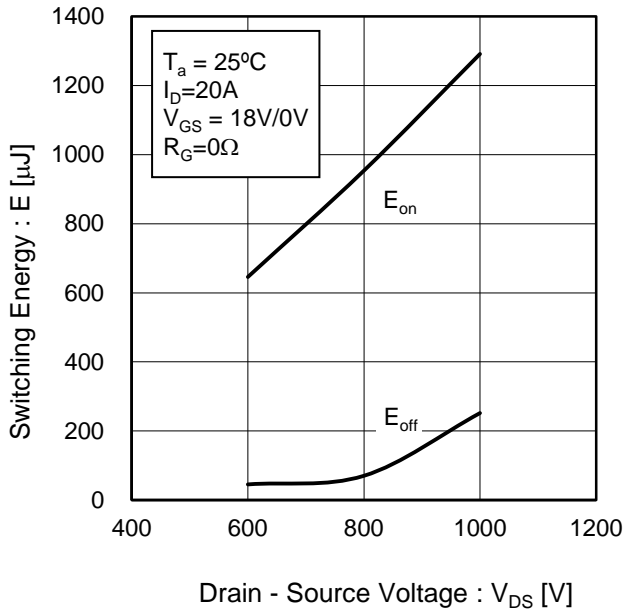


Fig.17 Typical Switching Loss vs. Drain Current

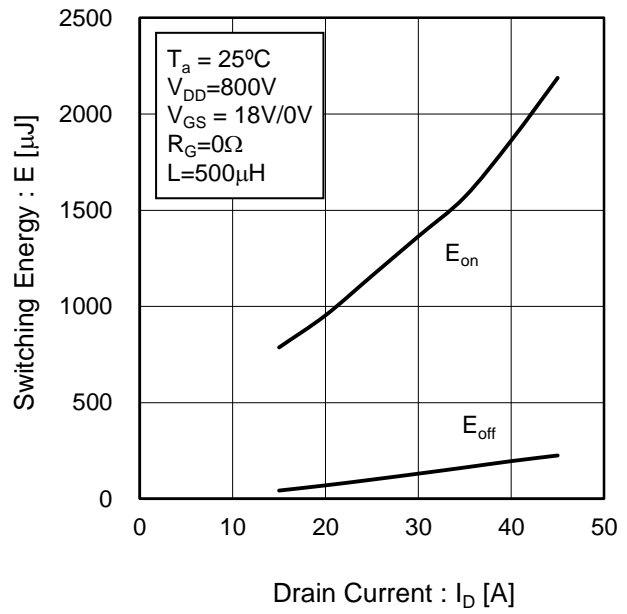
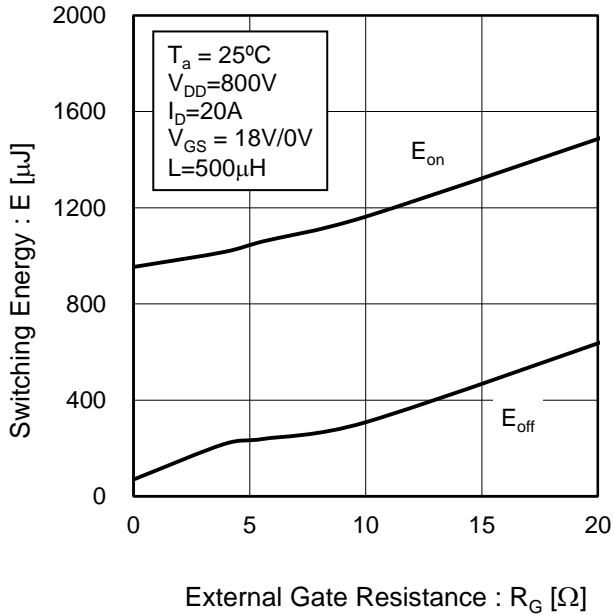


Fig.18 Typical Switching Loss vs. External Gate Resistance



●Electrical characteristic curves

Fig.19 Inverse Diode Forward Current vs. Source - Drain Voltage

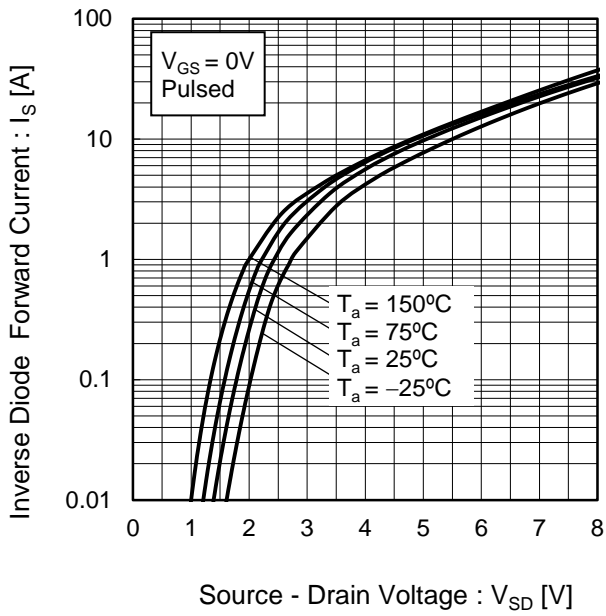
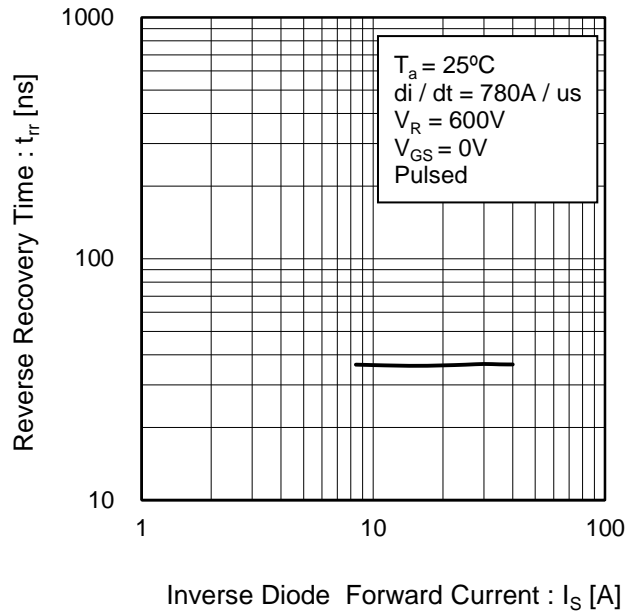


Fig.20 Reverse Recovery Time vs. Inverse Diode Forward Current



● Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

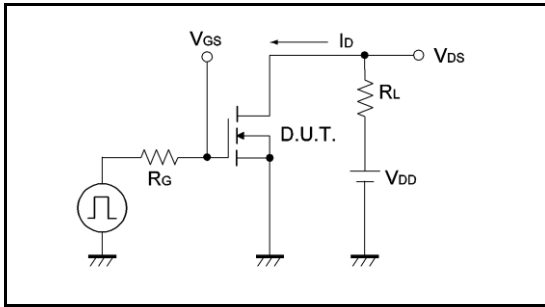


Fig.1-2 Switching Waveforms

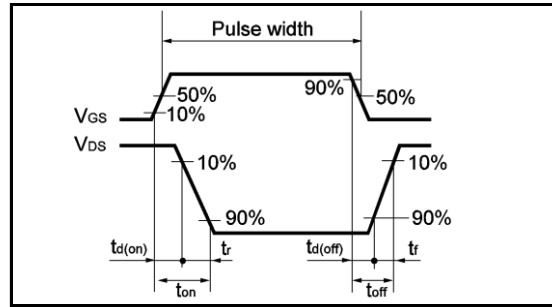


Fig.2-1 Gate Charge Measurement Circuit

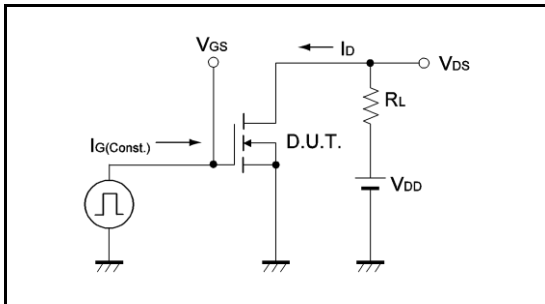


Fig.2-2 Gate Charge Waveform

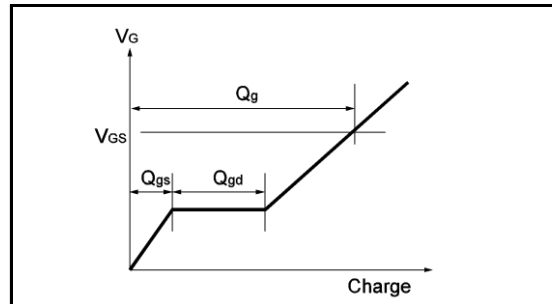


Fig.3-1 Switching Energy Measurement Circuit

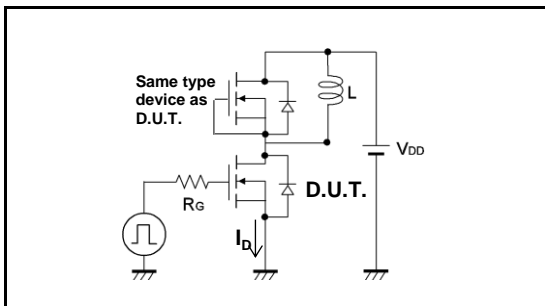


Fig.3-2 Switching Waveforms

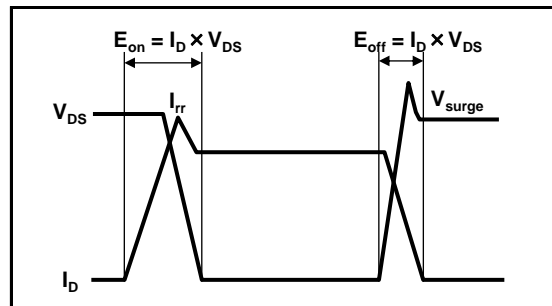


Fig.4-1 Reverse Recovery Time Measurement Circuit

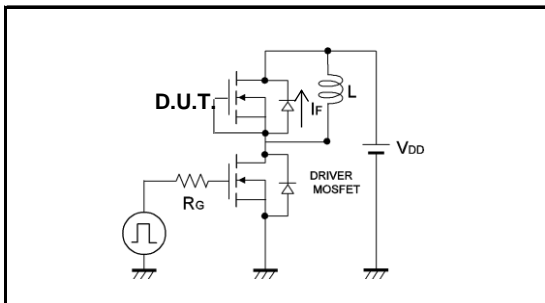
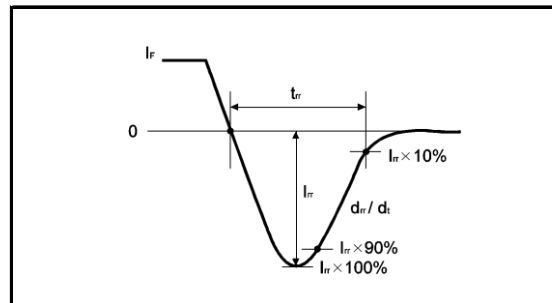


Fig.4-2 Reverse Recovery Waveform



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S2409 - Web Page

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Unit Quantity	
Minimum Package Quantity	
Packing Type	
Constitution Materials List	inquiry
RoHS	Yes