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ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Drain-source (GND) voltage ⁽¹⁾	V _{DSS}	800	V
Drain-Gate voltage (R _{GS} =1MΩ)	V _{DGR}	800	V
Gate-source (GND) voltage	V _{GS}	±30	V
Drain current pulsed ⁽²⁾	I _{DM}	12	A _{DC}
Single pulsed avalanche energy ⁽³⁾	E _{AS}	95	mJ
Avalanche current ⁽⁴⁾	I _{AS}	–	A
Continuous drain current (T _C =25°C)	I _D	3.0	A _{DC}
Continuous drain current (T _C =100°C)	I _D	2.1	A _{DC}
Supply voltage	V _{CC}	30	V
Analog input voltage range	V _{FB}	–0.3 to V _{SD}	V
Total power dissipation	P _D (wt H/S)	35	W
	Derating	0.28	W/°C
Operating temperature	T _{OPR}	–25 to +85	°C
Storage temperature	T _{STG}	–55 to +150	°C

NOTES:

1. T_j=25°C to 150°C
2. Repetitive rating: Pulse width limited by maximum junction temperature
3. L=51mH, starting T_j=25°C
4. L=13uH, starting T_j=25°C

ELECTRICAL CHARACTERISTICS (SFET part)

(Ta=25°C unless otherwise specified)

Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=50\mu A$	800	–	–	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=\text{Max.}, \text{Rating}, V_{GS}=0V$	–	–	250	μA
		$V_{DS}=0.8\text{Max.}, \text{Rating}, V_{GS}=0V, T_C=125^\circ C$	–	–	1000	μA
Static drain-source on resistance ^(note)	$R_{DS(ON)}$	$V_{GS}=10V, I_D=0.5A$	–	4	5	Ω
Forward transconductance ^(note)	gfs	$V_{DS}=50V, I_D=0.5A$	1.5	2.5	–	S
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1\text{MHz}$	–	779	–	pF
Output capacitance	C_{oss}		–	75.6	–	
Reverse transfer capacitance	C_{rss}		–	24.9	–	
Turn on delay time	td(on)	$V_{DD}=0.5BV_{DSS}, I_D=1.0A$ (MOSFET switching time are essentially independent of operating temperature)	–	40	–	nS
Rise time	tr		–	95	–	
Turn off delay time	td(off)		–	150	–	
Fall time	tf		–	60	–	
Total gate charge (gate-source+gate-drain)	Qg	$V_{GS}=10V, I_D=1.0A, V_{DS}=0.5BV_{DSS}$ (MOSFET switching time are essentially independent of operating temperature)	–	–	34	nC
Gate-source charge	Qgs		–	7.2	–	
Gate-drain (Miller) charge	Qgd		–	12.1	–	

NOTE: Pulse test: Pulse width $\leq 300\mu S$, duty cycle $\leq 2\%$

ELECTRICAL CHARACTERISTICS (Control part)

(Ta=25°C unless otherwise specified)

Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit
REFERENCE SECTION						
Output voltage ⁽¹⁾	Vref	Ta=25°C	4.80	5.00	5.20	V
Temperature Stability ⁽¹⁾⁽²⁾	Vref/ΔT	-25°C≤Ta≤+85°C	-	0.3	0.6	mV/°C
OSCILLATOR SECTION						
Initial accuracy	F _{OSC}	Ta=25°C	45	50	55	kHz
Frequency change with temperature ⁽²⁾	ΔF/ΔT	-25°C≤Ta≤+85°C	-	±5	±10	%
PWM SECTION						
Maximum duty cycle	Dmax	-	74	77	80	%
FEEDBACK SECTION						
Feedback source current	I _{FB}	Ta=25°C, 0V≤Vfb≤3V	0.7	0.9	1.1	mA
Shutdown delay current	I _{delay}	Ta=25°C, 5V≤Vfb≤V _{SD}	4	5	6	μA
OVER CURRENT PROTECTION SECTION						
Over current protection	I _L (max)	Max. inductor current	1.89	2.15	2.41	A
UVLO SECTION						
Start threshold voltage	V _{th} (H)	-	8.4	9	9.6	V
Minimum operating voltage	V _{th} (L)	After turn on	14	15	16	V
TOTAL STANDBY CURRENT SECTION						
Start current	I _{ST}	V _{CC} =14V	-	0.1	0.17	mA
Operating supply current (control part only)	I _{OPR}	V _{CC} ≤28	-	7	12	mA
SHUTDOWN SECTION						
Shutdown Feedback voltage	V _{SD}	Vfb≥6.5V	6.9	7.5	8.1	V
Thermal shutdown temperature (Tj) ⁽¹⁾	T _{SD}	-	140	160	-	°C
Over voltage protection	V _{OVP}	V _{CC} ≥24V	25	27	29	V

NOTES:

1. These parameters, although guaranteed, are not 100% tested in production
2. These parameters, although guaranteed, are tested in EDS (wafer test) process

TYPICAL PERFORMANCE CHARACTERISTICS (SFET part)

Fig 1. Output Characteristics

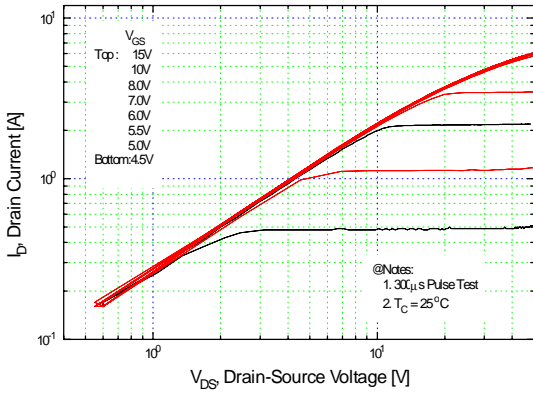


Fig. 2 Transfer Characteristics

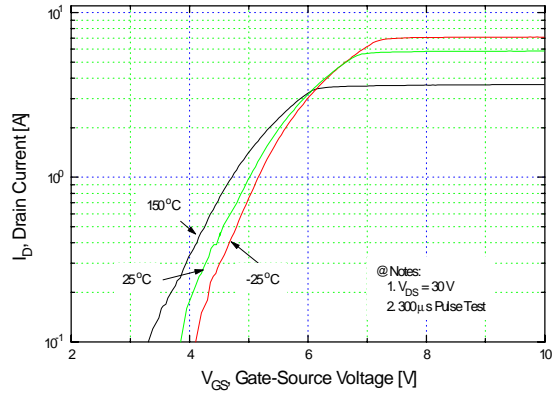


Fig. 3 On-Resistance vs. Drain Current

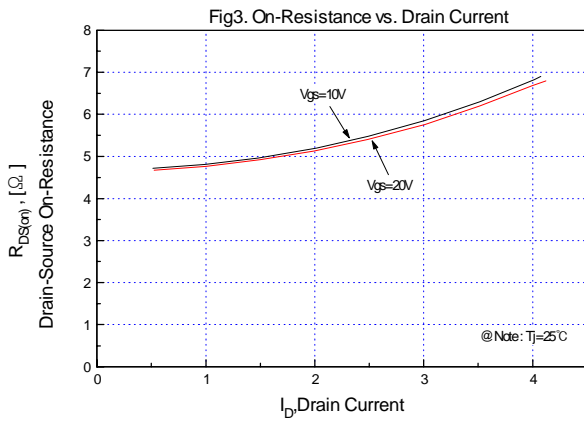


Fig. 4 Source-Drain Diode Forward Voltage

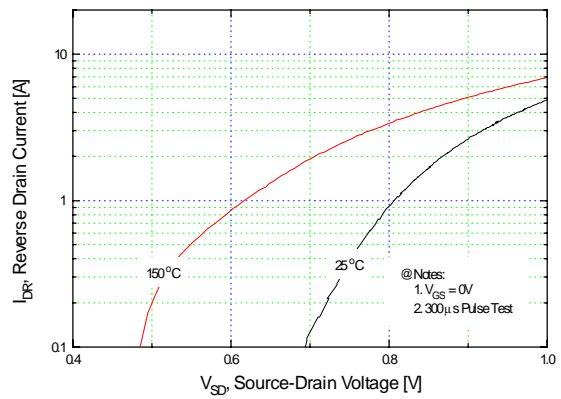


Fig.5 Capacitance vs. Drain-Source Voltage

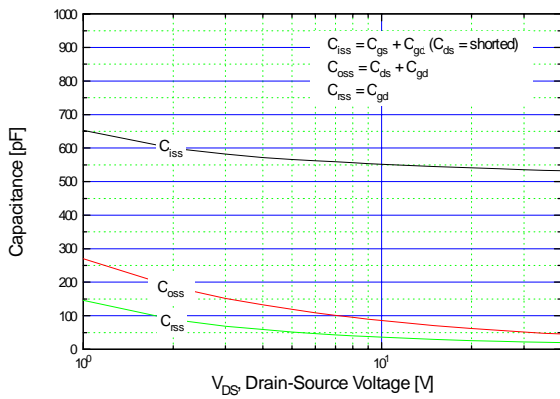
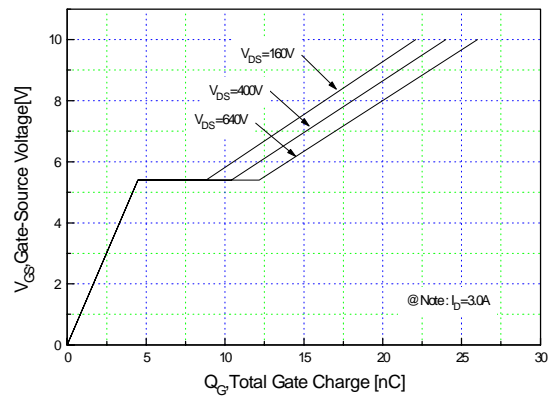


Fig. 6 Gate Charge vs. Gate-Source Voltage



TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

Fig. 7 Breakdown Voltage vs. Temperature

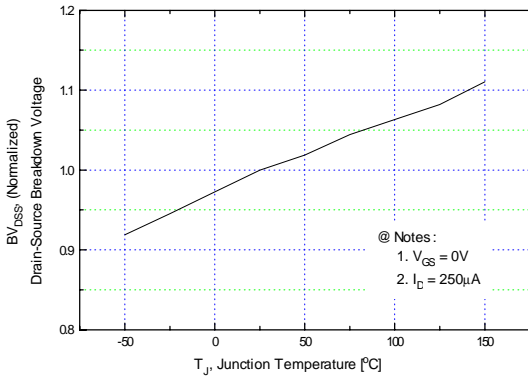


Fig. 8 On-Resistance vs. Temperature

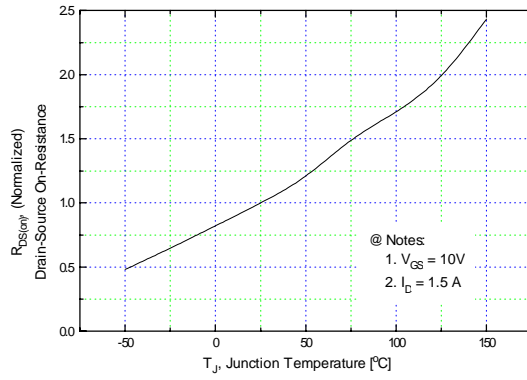


Fig. 9 Max. Safe Operating Area

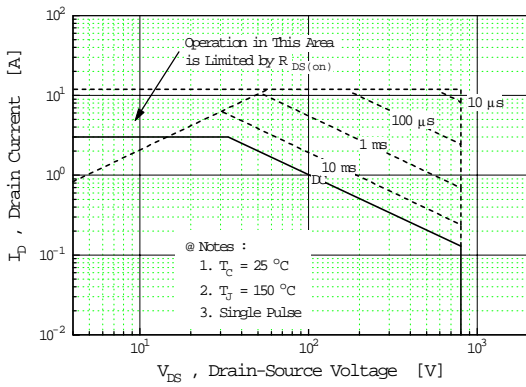


Fig. 10 Max. Drain Current vs. Case Temperature

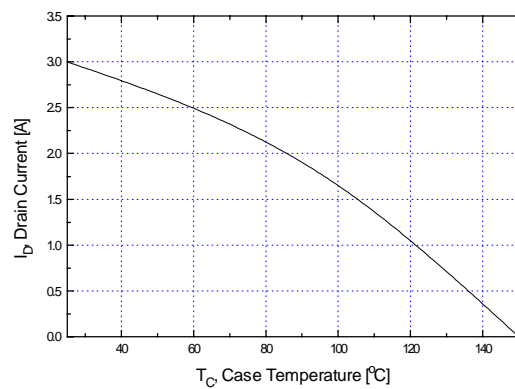
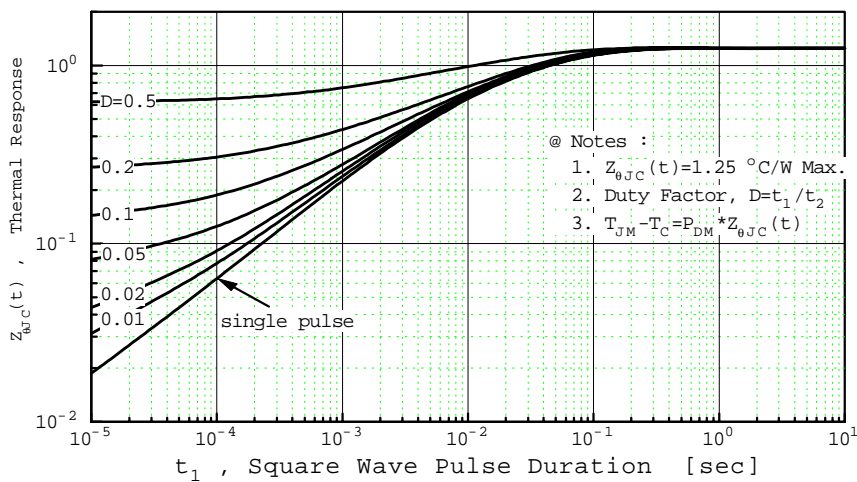
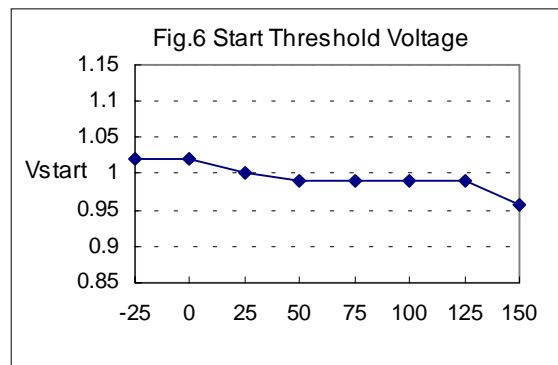
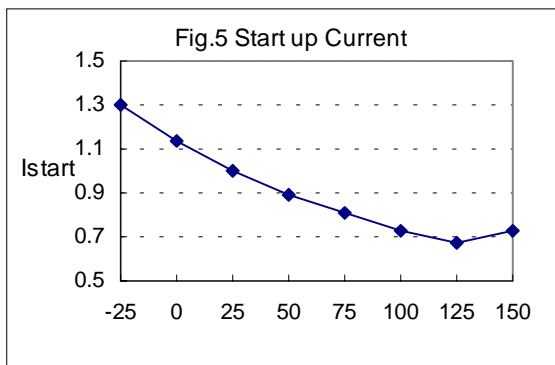
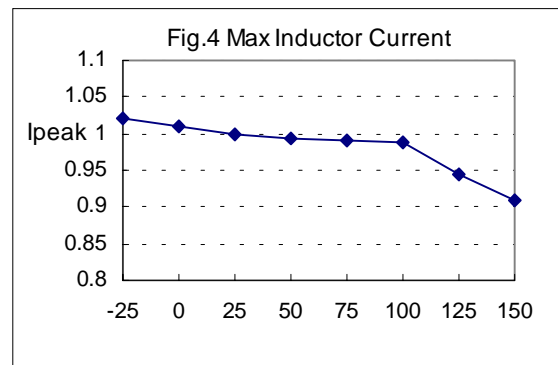
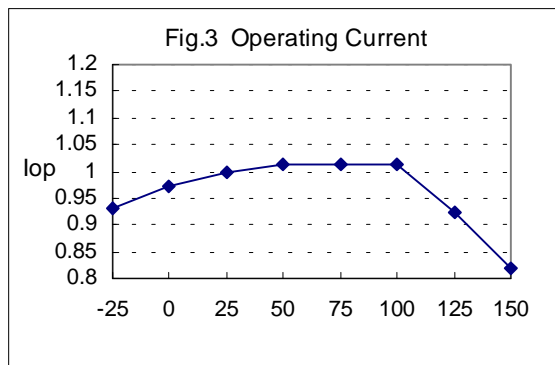
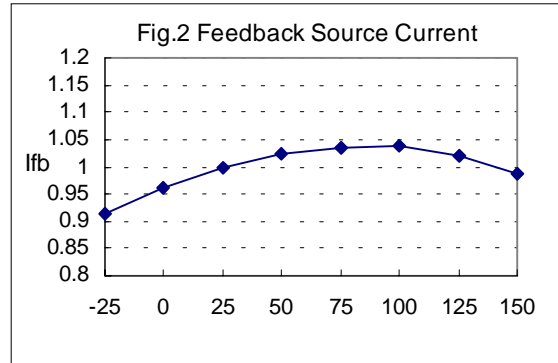
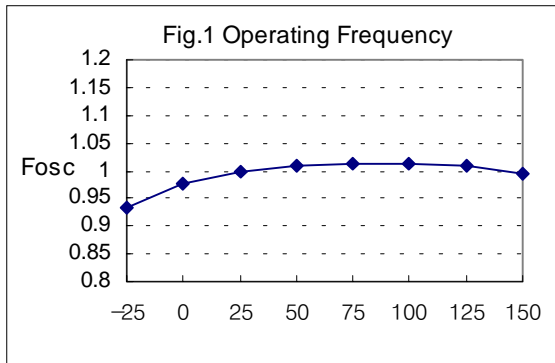


Fig. 11 Thermal Response

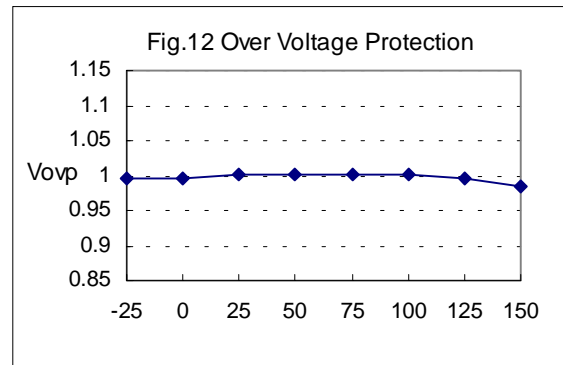
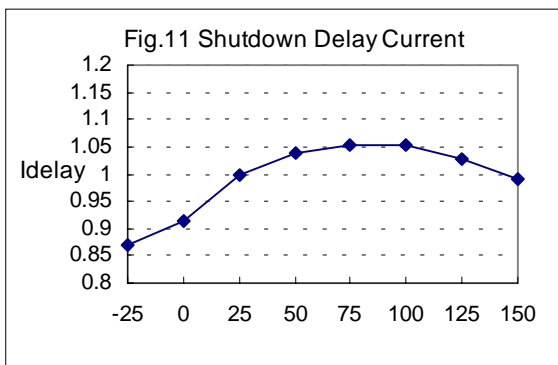
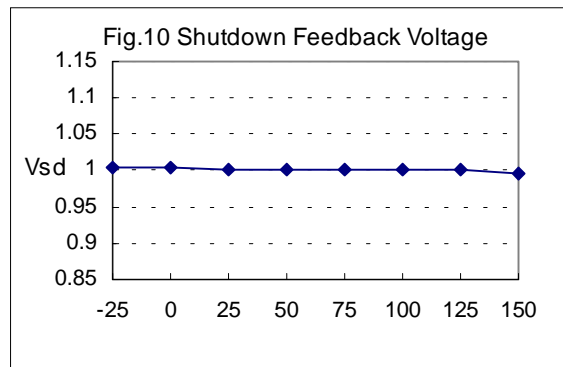
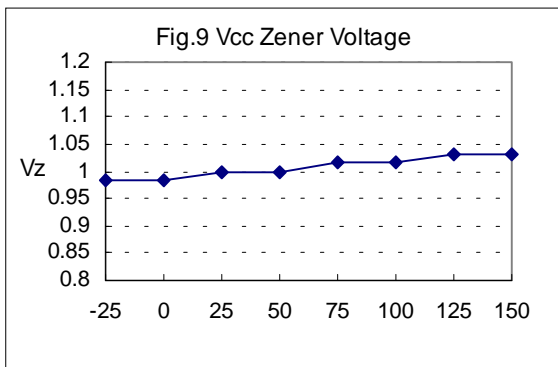
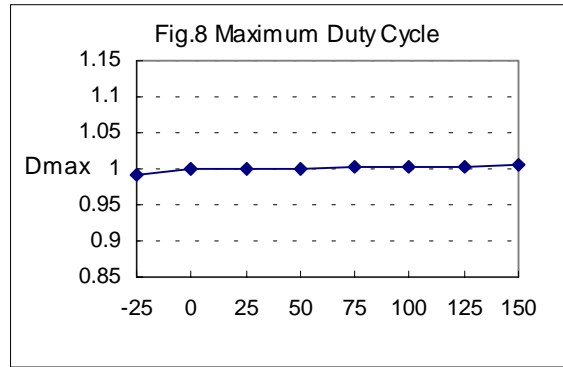
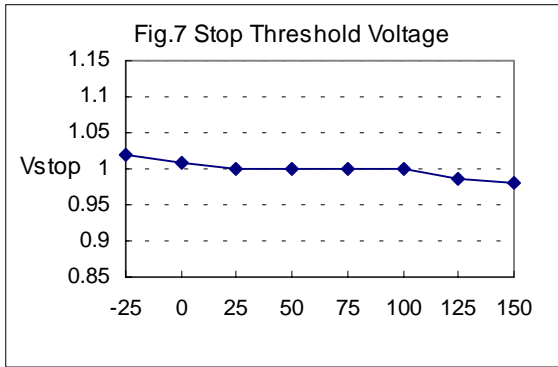


TYPICAL PERFORMANCE CHARACTERISTICS (Control part)



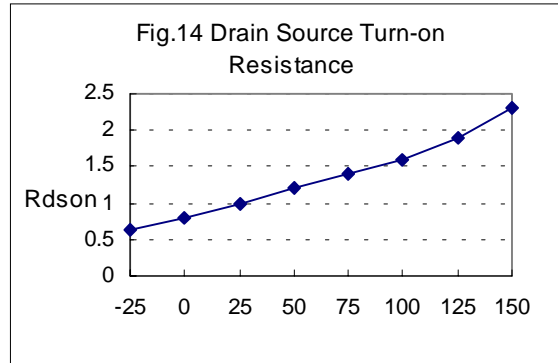
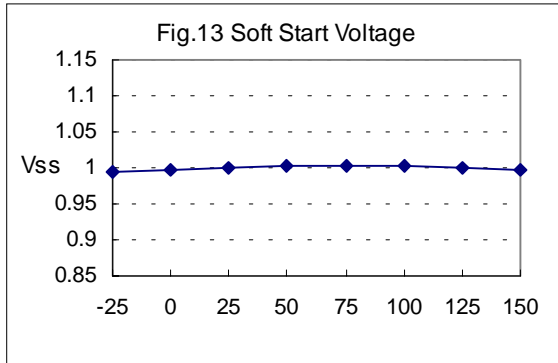
TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

(These characteristic graphs are normalized at Ta=25°C)



TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

(These characteristic graphs are normalized at Ta=25°C)



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