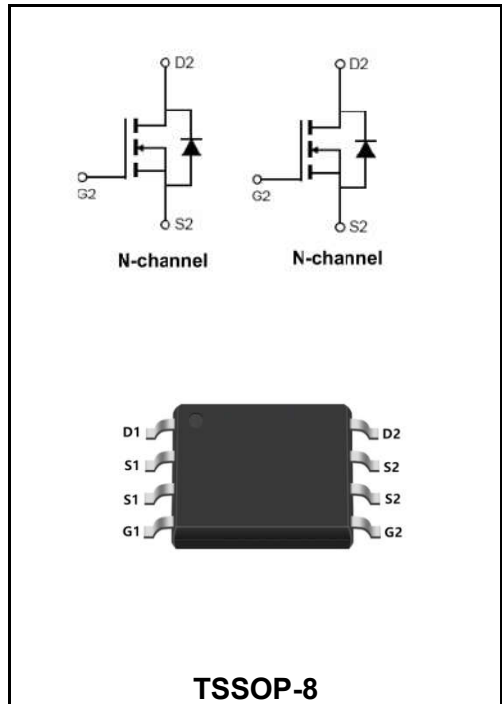


20V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	20V
R_{DS(on)-typ}(@V_{GS}=4.5V)	< 12.5mΩ (Type:10 mΩ)



Application

- ◆ Power switching application
- ◆ Hard Switched and High Frequency Circuits
- ◆ Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW12H02TS	TSSOP-8	YFW 12H02TS XXXXX	5000PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±12	V
Drain Current, V _{GS} @ 4.5V @T _c =25°C	I_D	12	A
Drain Current, V _{GS} @ 4.5V @T _c =100°C	I_D	7	A
Drain Current, V _{GS} @ 4.5V ³ @T _A =25°C	I_D	10	A
Drain Current, V _{GS} @ 4.5V ³ @T _A =70°C	I_D	8.5	A
Pulsed Drain Current ¹	I_{DM}	80	A
Total Power Dissipation @T _c =25°C	P_D	15.6	W
Total Power Dissipation ³ @T _A =25°C	P_D	5	W
Single Pulse Avalanche Energy ⁴	E_{AS}	7.2	mJ
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Maximum Thermal Resistance, Junction-case	R_{thj-c}	8	°C/W
Maximum Thermal Resistance, Junction-ambient ³	R_{thj-a}	25	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	B_{VDSS}	20	-	-	V
Static Drain-Source OnResistance ²	$V_{GS}=4.5V, I_D=12A$	$R_{DS(on)}$	-	10	12.5	mΩ
	$V_{GS}=2.5V, I_D=12A$		-	12	19	mΩ
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	-	1.2	V
Forward Transcond uctance	$V_{DS} = 5V, I_D = 20A$	g_{fs}	-	50	-	S
Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V$	I_{DSS}	-	-	10	uA
Gate-Source Leakage	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Total Gate Charge	$I_D=20A$ $V_{DS}=10V$ $V_{GS}=4.5V$	Q_g	-	16	25.6	nC
Gate-Source Charge		Q_{gs}	-	3	-	nC
Gate-Drain ("Miller") Charge		Q_{gd}	-	4.5	-	nC
Turn-on delay time	$V_{DS} = 10V$ $I_D = 1A$ $R_G = 3.3\Omega$ $V_{GS}=5V$	$t_{d(on)}$	-	10	-	ns
Rise Time		T_r	-	13	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	28	-	ns
Fall Time		t_f	-	7	-	ns
Input Capacitance	$V_{GS}=0V$ $V_{DS}=10V$ $f=1.0MHz$	C_{iss}	-	1400	2240	pF
Output Capacitance		C_{oss}	-	170	-	pF
Reverse Transfer Capacitance		C_{rss}	-	135	-	pF
Gate Resistance	$f=1.0MHz$	R_g	-	1	2	Ω
Forward On Voltage ²	$I_S=20A, V_{GS}=0V$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S=12A, V_{GS}=0V,$ $di/dt=100A/\mu s$	t_{rr}	-	8.5	-	ns
Reverse Recovery Charge		Q_{rr}	-	2.5	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤10sec ; 60 °C/W at steady state.
- 4.Starting T_j=25°C , V_{DD}=20V , L=0.1mH , R_G=25Ω , V_{GS}=10V

Ratings and Characteristic Curves

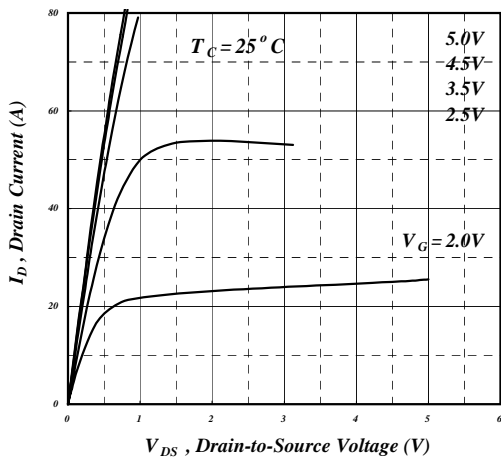


Fig 1. Typical Output Characteristics

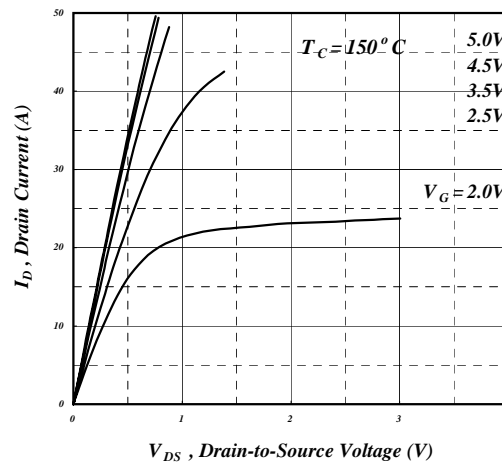


Fig 2. Typical Output Characteristics

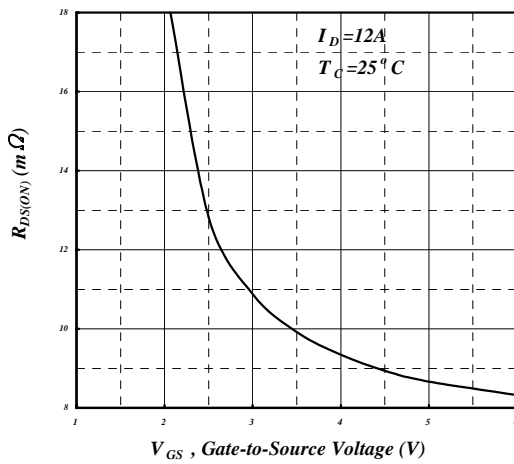


Fig 3. On-Resistance v.s. Gate Voltage

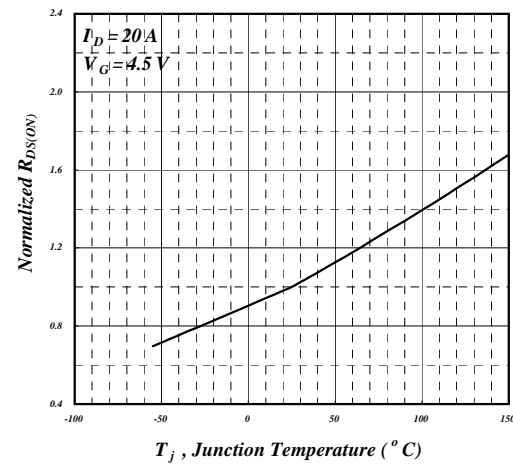


Fig 4. Normalized On-Resistance v.s. Junction Temperature

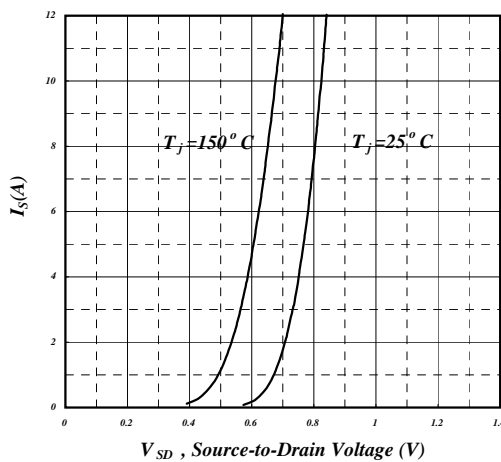


Fig 5. Forward Characteristic of Reverse Diode

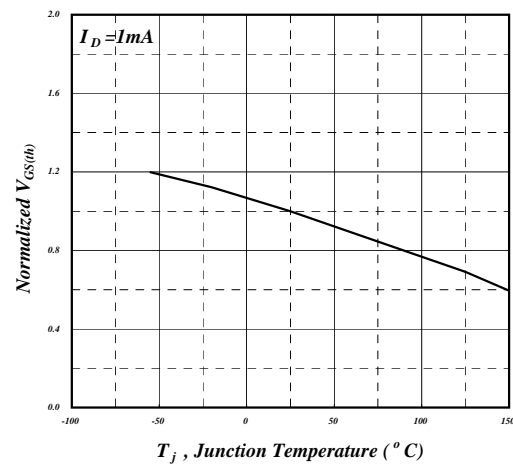


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Ratings and Characteristic Curves

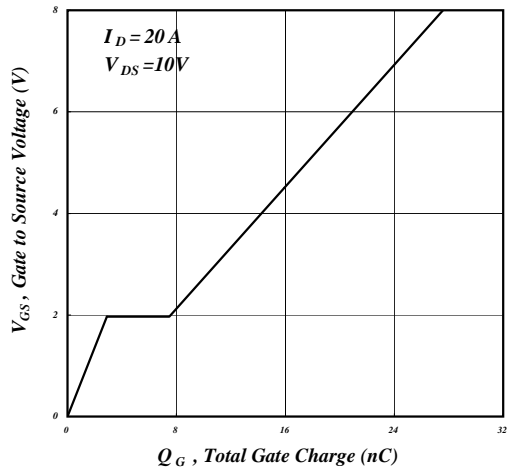


Fig 7. Gate Charge Characteristics

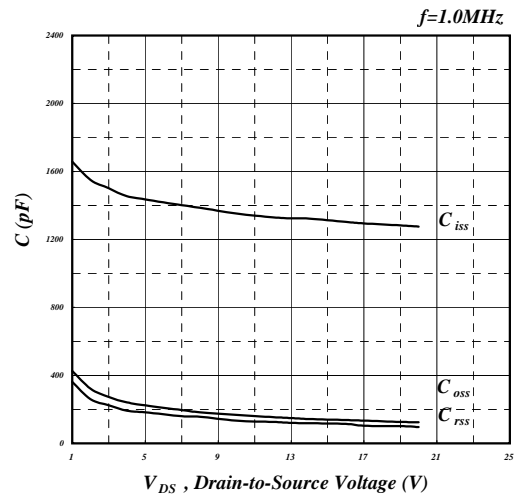


Fig 8. Typical Capacitance Characteristics

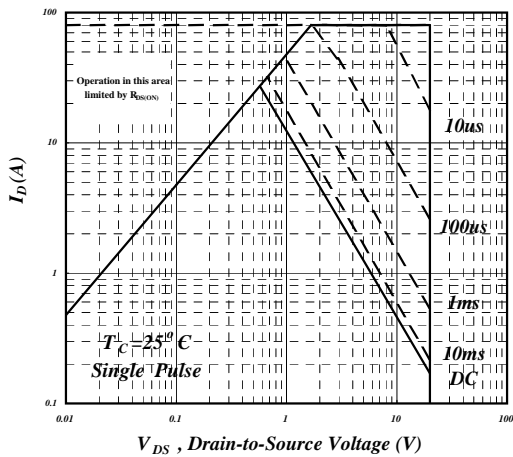


Fig 9. Maximum Safe Operating Area

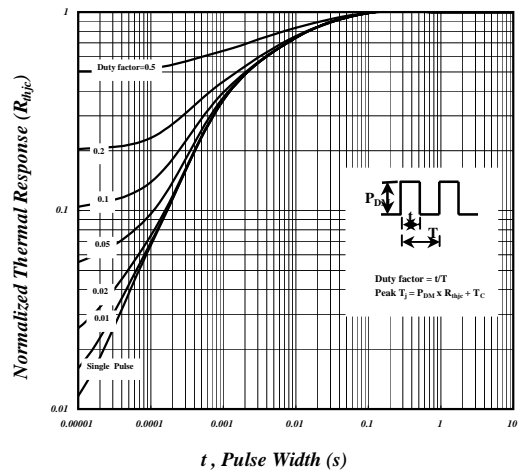


Fig 10. Effective Transient Thermal Impedance

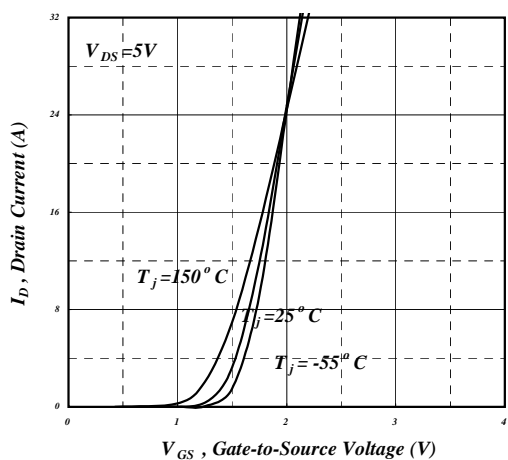


Fig 11. Transfer Characteristics

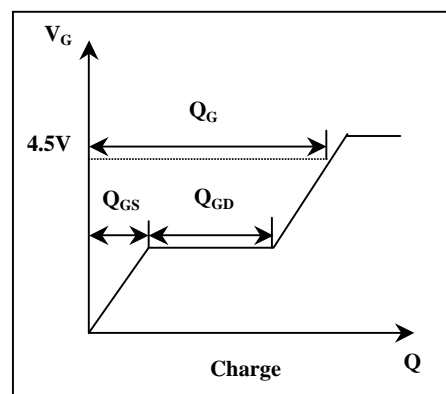


Fig 12. Gate Charge Waveform

Ratings and Characteristic Curves

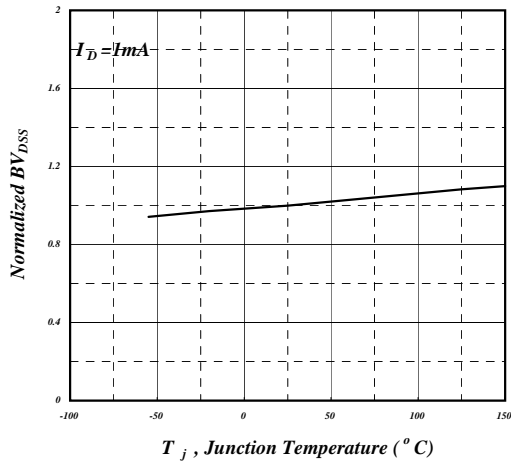


Fig 13. Normalized BV_{DSS} v.s. Junction Temperature

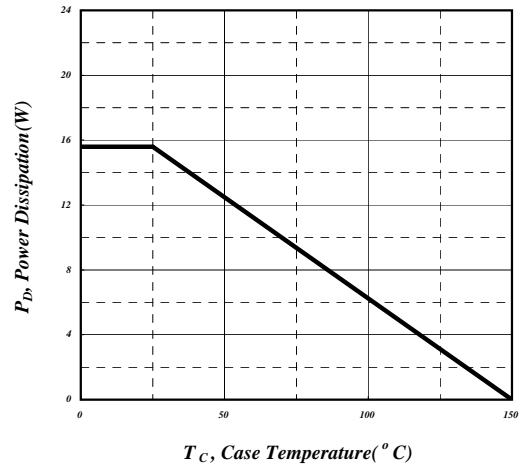


Fig 14. Total Power Dissipation

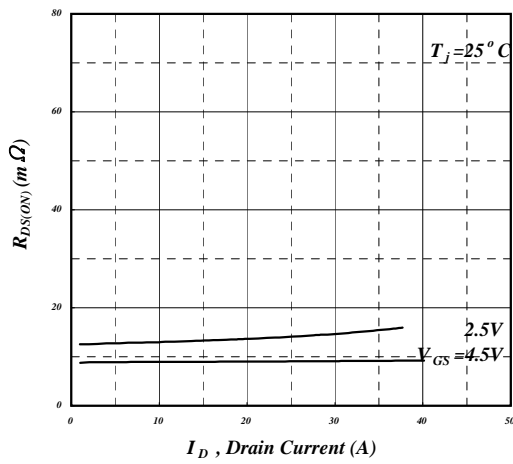
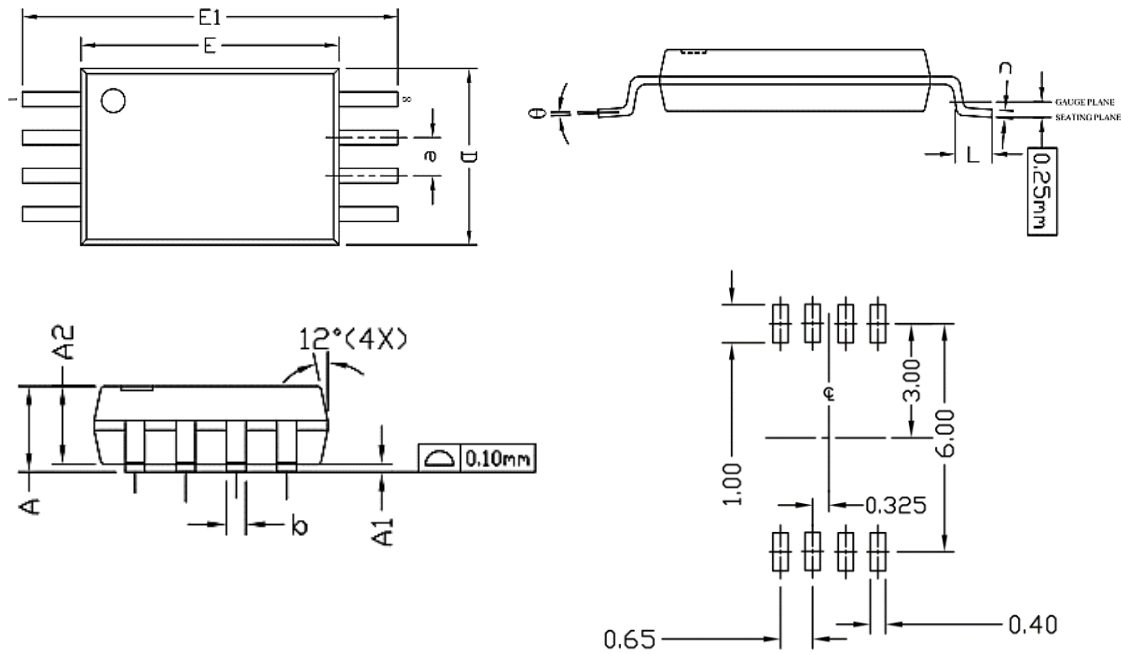


Fig 15. Typ. Drain-Source on State Resistance

TSSOP-8



Symbol	Common		
	mm		
	Mim	Nom	Max
A	/	/	1.20
A1	0.05	/	0.15
A2	0.80	1.00	1.05
b	0.19	/	0.30
c	0.09	/	3.45
D	2.90	3.00	3.1
E1	6.40BSC		
E	4.30	4.40	4.50
E	0.65BSC		
L	0.45	0.60	0.75
Φ	0°	0.48	8°