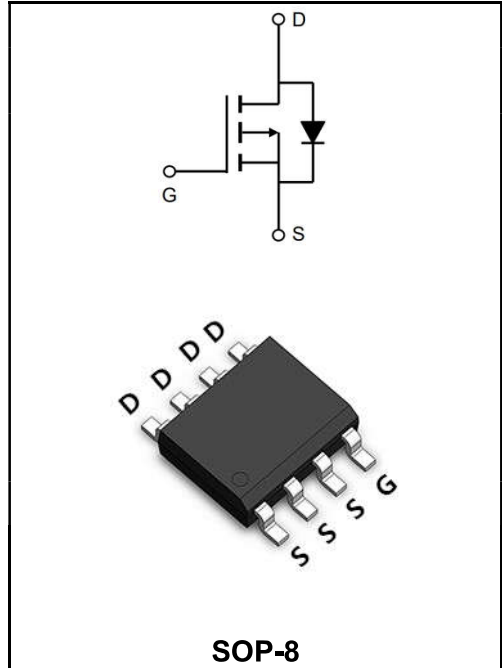


-20V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-16A
V_{DSS}	-20V
R_{DS(on)-typ}(@V_{GS}=-4.5V)	< 20mΩ (Type:14 mΩ)



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

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
Continuous Drain Current, V _{GS} @ -4.5V ¹ @T _C =25°C	I_D	-16	A
Continuous Drain Current, V _{GS} @ -4.5V ¹ @T _C =70°C	I_D	-8	A
Pulsed Drain Current ²	I_{DM}	-48	A
Total Power Dissipation ³ @T _C =25°C	P_D	2.5	W
Total Power Dissipation ³ @T _C =70°C	P_D	1.6	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	R_{θJA}	85	°C/W
Thermal Resistance Junction to Case ¹	R_{θJC}	24	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-20	-24	-	V
BV_{DSS} Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.012	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=-4.5V, I_D=-20A$	$R_{DS(ON)}$	-	14	20	mΩ
	$V_{GS}=-2.5V, I_D=-10A$		-	22	28	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.5	-0.6	-1.2	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	2.94	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
Gate -Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Total Gate Charge(-4.5V)	$V_{DS}=-10V$ $V_{GS}=-4.5V$ $I_D=-6A$	Q_g	-	15.3	-	nC
Gate-Source Charge		Q_{gs}	-	2.2	-	
Gate-Drain Charge		Q_{gd}	-	4.4	-	
Turn-on delay time	$V_{DD}=-10V$ $V_{GS}=-4.5V$ $I_D=-10A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	10	-	ns
Rise Time		T_r	-	31	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	28	-	
Fall Time		t_f	-	8	-	
Input Capacitance	$V_{DS}=-10V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2000	-	pF
Output Capacitance		C_{oss}	-	242	-	
Reverse Transfer Capacitance		C_{rss}	-	231	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V, \text{ Force Current}$	I_S	-	-	-20	A
Pulsed Source Current ^{2,4}		I_{SM}	-	-	-48	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	V_{SD}	-	-	-1.2	V

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\cong 300\mu s$, duty cycle $\cong 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

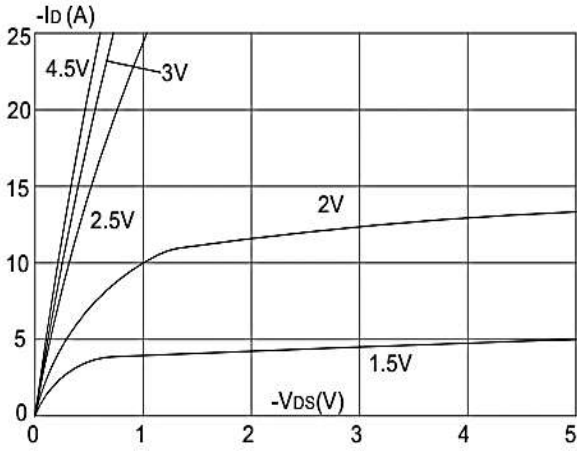


Figure 1: Output Characteristics

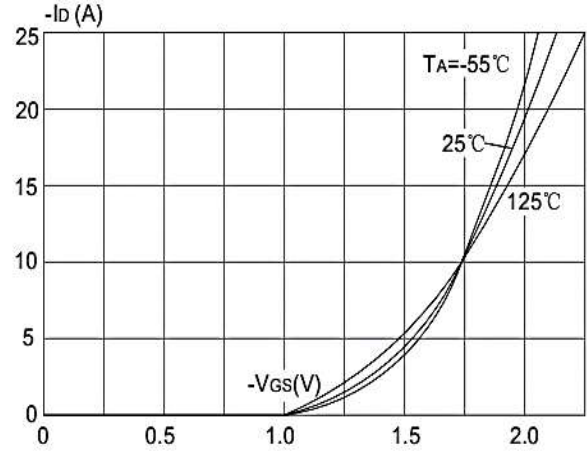


Figure 2: Typical Transfer Characteristics

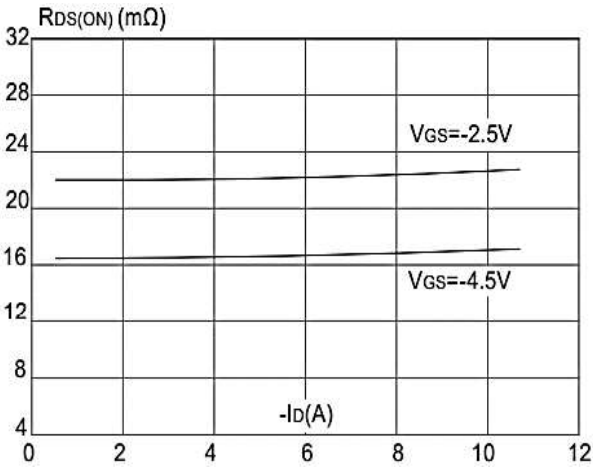


Figure 3: On-resistance vs. Drain Current

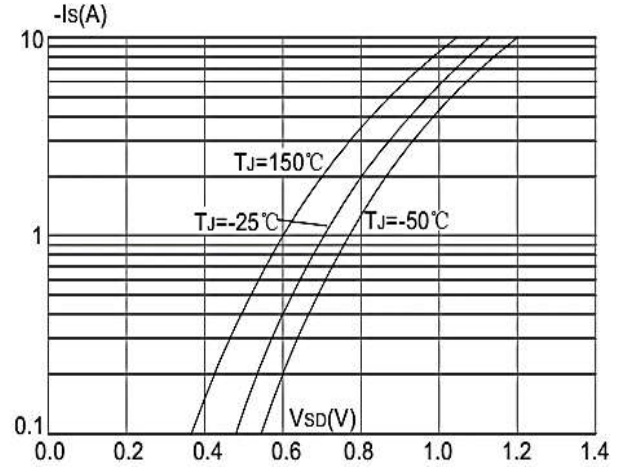


Figure 4: Body Diode Characteristics

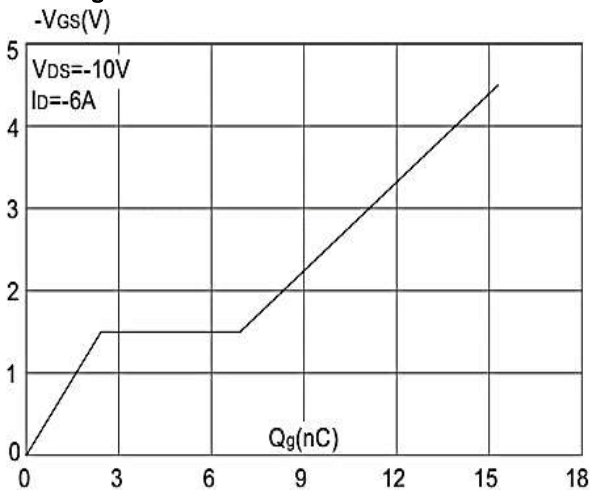


Figure 5: Gate Charge Characteristics

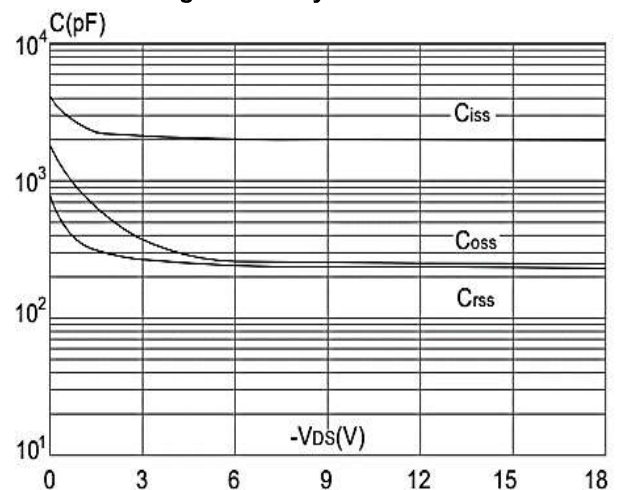


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

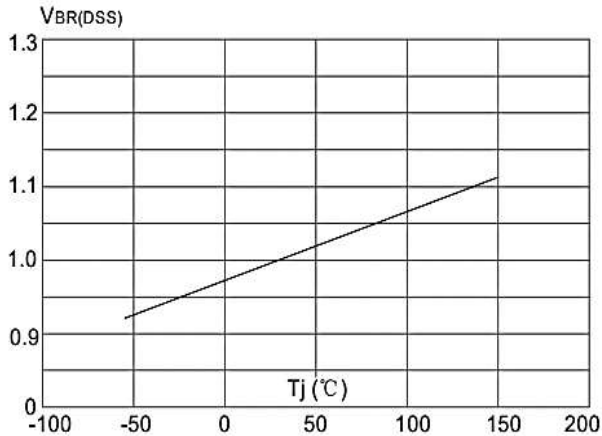


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

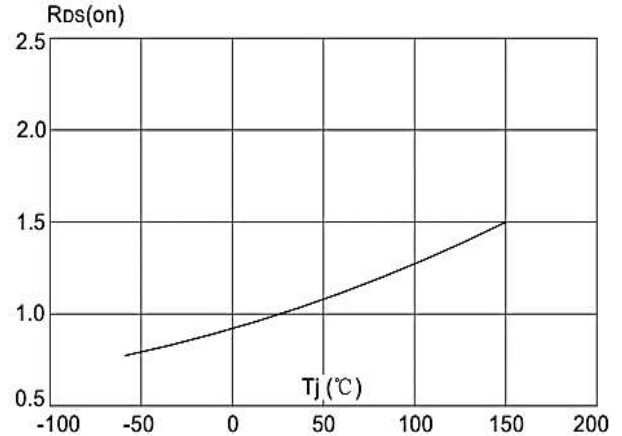


Figure 8: Normalized on Resistance vs. Junction Temperature

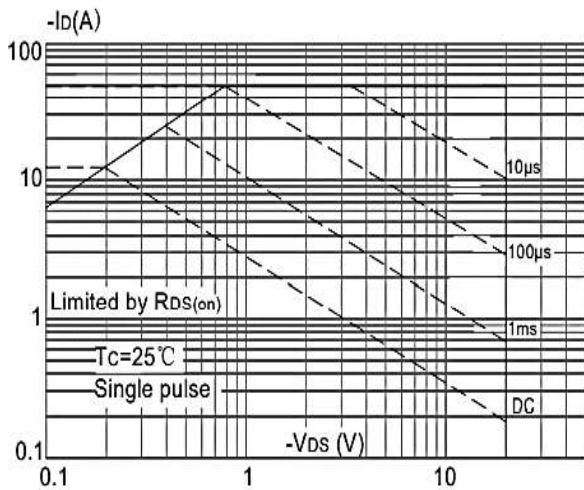


Figure 9: Maximum Safe Operating Area

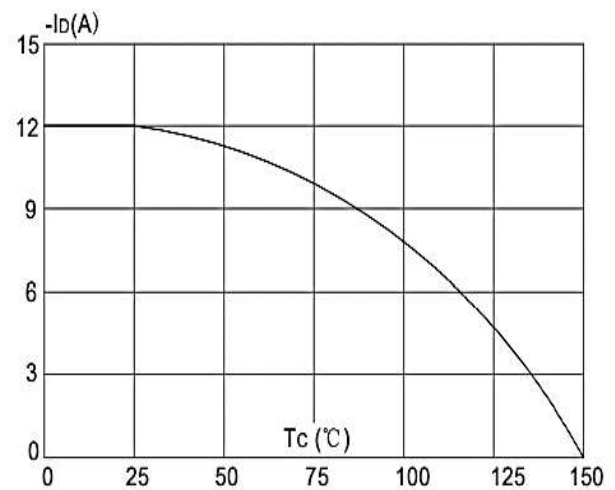


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

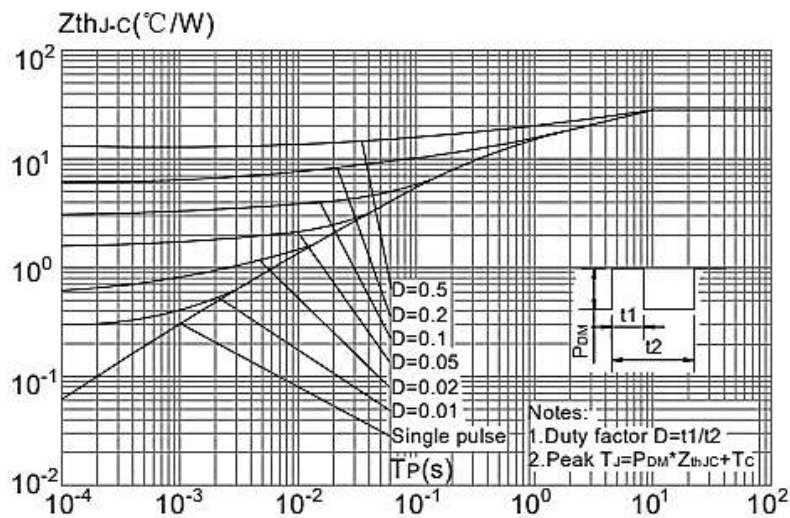
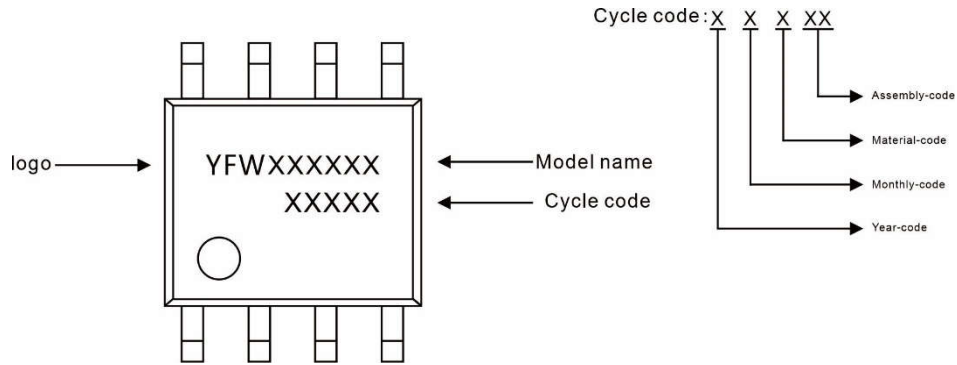


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Marking Diagram



Ordering information

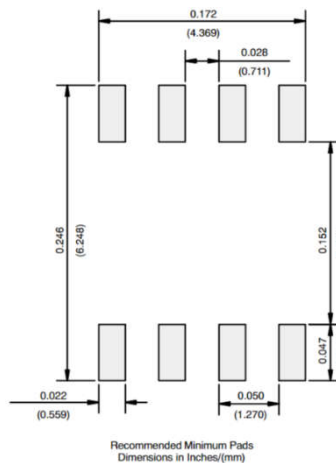
Package	Packing Description	Packing Quantity
SOP-8	Tape/Reel, 13" reel	3000PCS/Reel 30000PCS/Carton

Package Dimensions

SOP-8

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.35	1.50	0.053	0.059
b	0.35	0.55	0.014	0.022
c	0.15	0.25	0.006	0.010
D	4.80	5.00	0.189	0.197
D1	3.10	3.50	0.122	0.138
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
E2	2.20	2.60	0.087	0.102
e	1.27 (BSC)		0.050 (BSC)	
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

The recommended mounting pad size



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