

30V N-Channel MOSFETs

MAIN CHARACTERISTICS

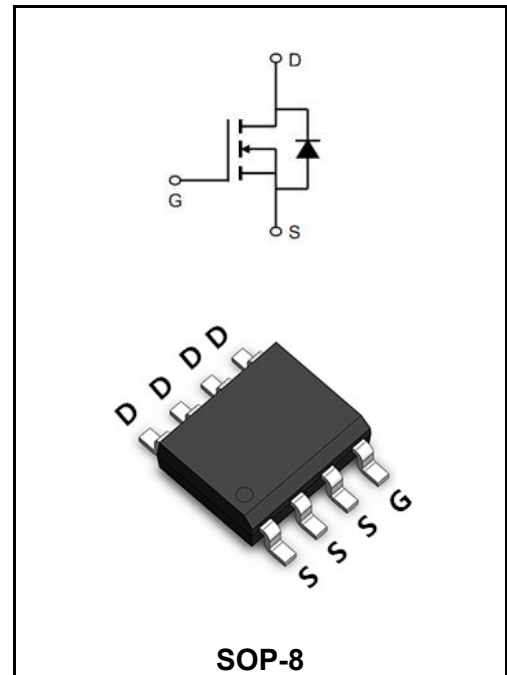
I_D	15A
V_{DS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<10m\Omega$ (Typ: 7.5 m Ω)

FEATURES

- ◆ Improved dv/dt capability
- ◆ Fast switching
- ◆ Green Device Available

APPLICATIONS

- ◆ Notebook
- ◆ Load Switch
- ◆ LED applications
- ◆ Hand-Held Device



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	15	A
Pulsed Drain Current ¹	I_{DM}	60	A
Power Dissipation (T _c =25°C)	P_D	4	W
Power Dissipation – Derate above 25°C		0.032	W/°C
Single Pulse Avalanche Energy	E_{AS}	80	mJ
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	31	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	85	°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}	30	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.6	2.5	V
Drain-Source on-Resistance	$V_{GS}=10V, I_D=6A$	$R_{DS(on)}$	-	7.5	10	m Ω
	$V_{GS}=4.5V, I_D=3A$	$R_{DS(on)}$	-	10.5	14	m Ω
Forward Transconductance	$V_{DS}=10V, I_D=10A$	g_{fs}	-	18	-	S
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $F=1MHz$	C_{iss}	-	750	1350	μF
Output Capacitance		C_{oss}	-	150	300	
Reverse Transfer Capacitance		C_{rss}	-	110	200	
Total Gate Charge	$V_{DS}=15V,$ $V_{GS}=4.5V$ $I_D=10A,$	Q_g	-	7.5	15	nC
Gate-Source Charge		Q_{gs}	-	1.3	3	
Gate-Drain Charge		Q_{gd}	-	4.5	9	
Turn-on delay time	$V_{DD}=15V$ $V_{GS}=10V$ $R_G=3.3\Omega$ $I_D=15A$	$t_{d(on)}$	-	4.8	9	ns
Rise Time		T_r	-	12.5	25	
Turn-Off Delay Time		$t_{d(OFF)}$	-	27.6	50	
Fall Time		t_f	-	8.2	16	
Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	R_g	-	2.7	4.5	Ω
Maximun Body-Diode Continuous Current		I_s	-	-	15	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	30	A
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_s=1A, T_J=25^\circ C$	V_{SD}	-	-	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Ratings and Characteristic Curves

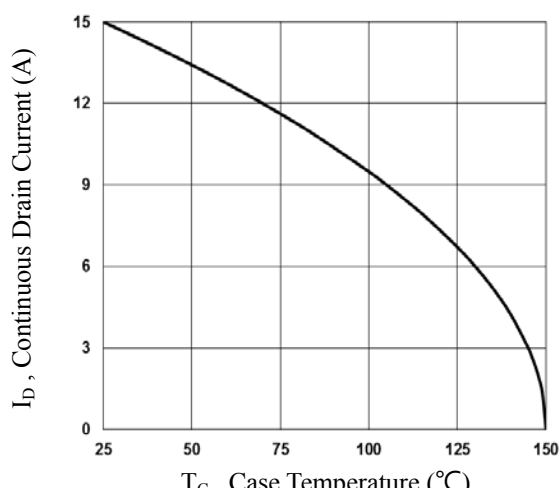


Fig.1 Continuous Drain Current vs. T_c

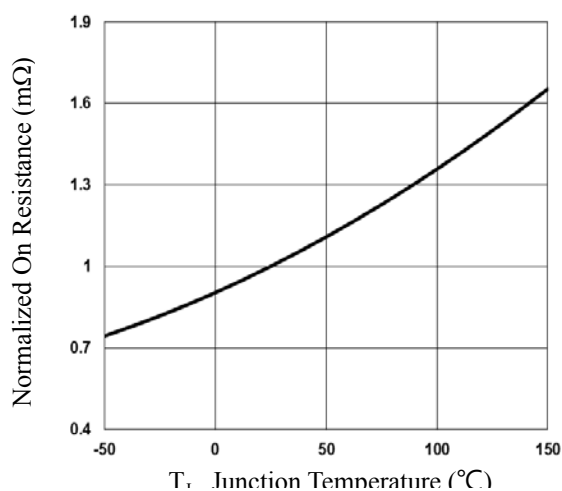


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

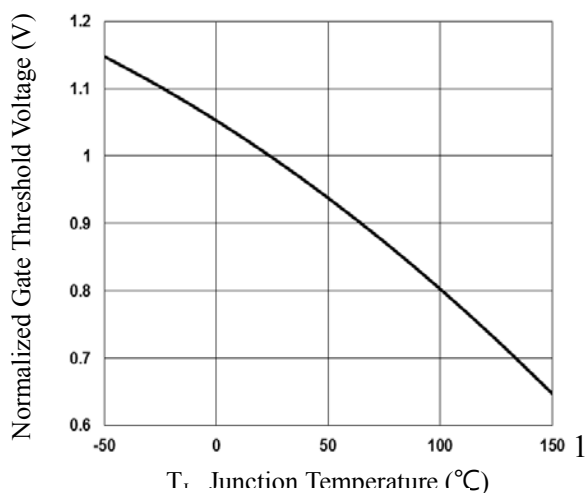


Fig.3 Normalized V_{th} vs. T_J

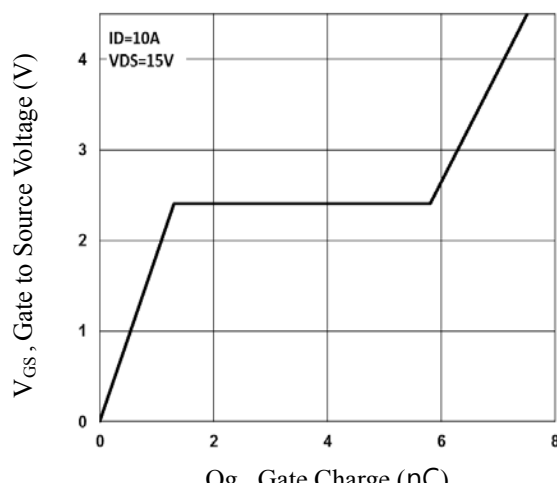


Fig.4 Gate Charge Waveform

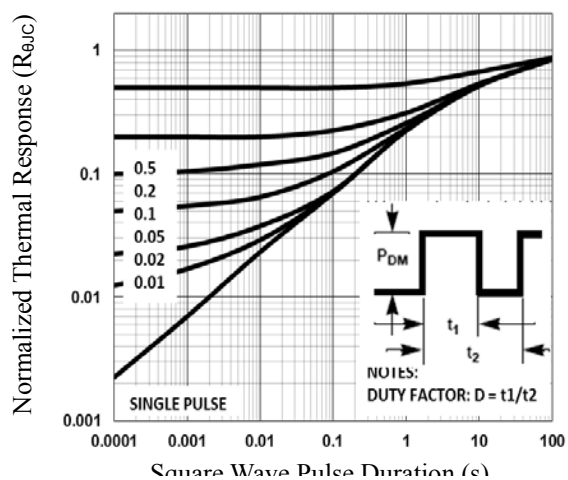


Fig.5 Normalized Transient Impedance

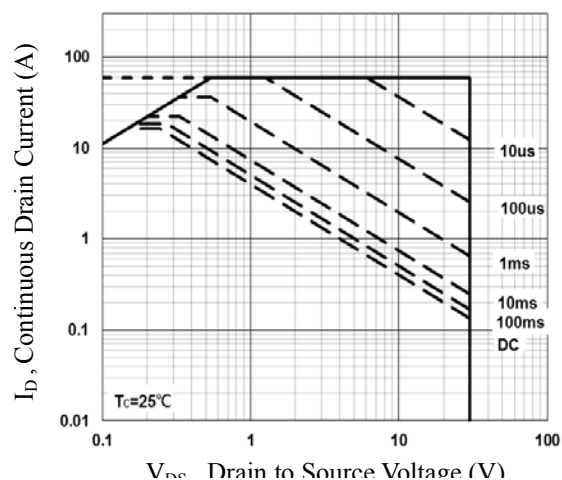


Fig.6 Maximum Safe Operation Area

Ratings and Characteristic Curves

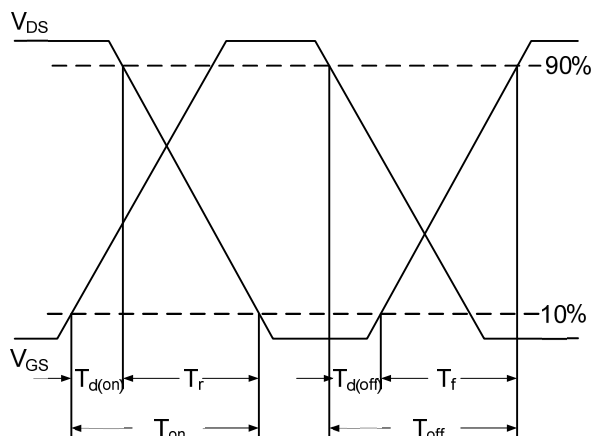


Fig.7 Switching Time Waveform

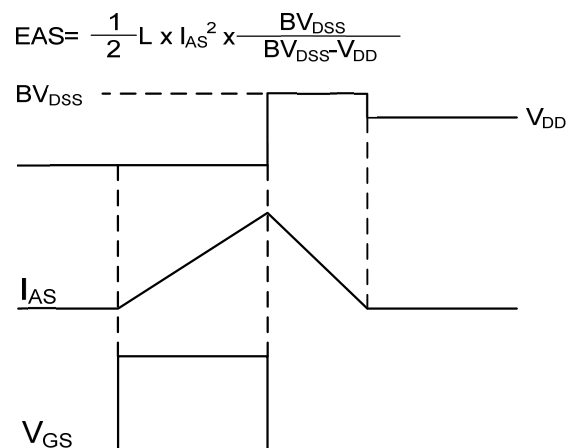
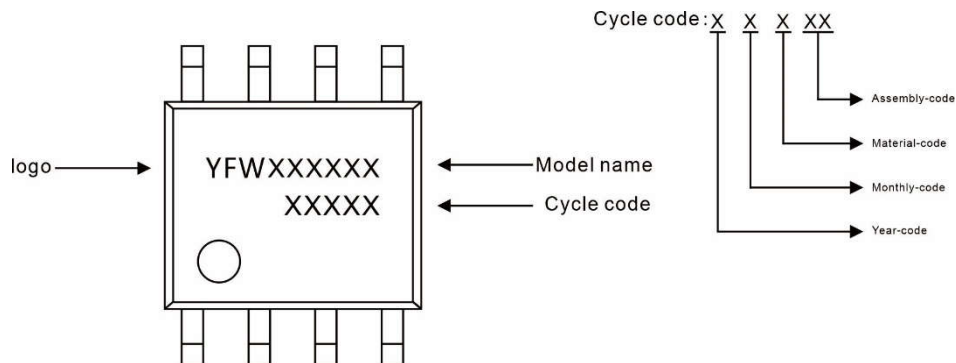


Fig.8 EAS Waveform

Marking Diagram



Ordering information

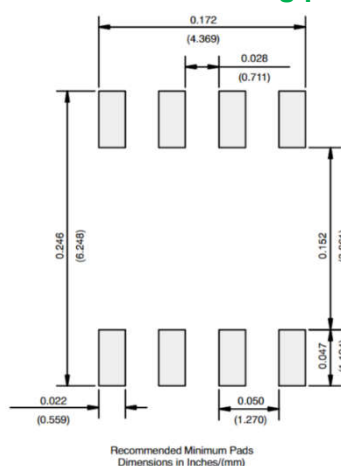
Package	Packing Description	Packing Quantity
SOP-8	Tape/Reel, 13" reel	3000PCS/Reel 30000PCS/Carton

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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