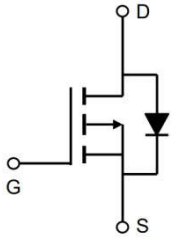
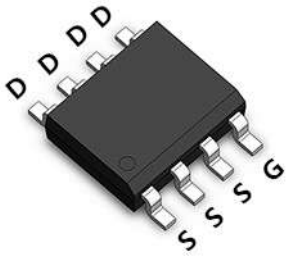
-40V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-10A
V_{DSS}	-40V
R_{DSON}-typ(@V_{GS}=-4.5V)	< 20mΩ(Type:15 mΩ)





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Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW4485S	SOP-8	4485 KC****	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=25℃	I_D	-10	A
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=70℃	I_D	-8	A
Pulsed Drain Current [2]	I_{DM}	-120	A
Single Pulse Avalanche Energy[3]	E_{AS}	118	mJ
Total Power Dissipation[4] @T_C=25℃	P_D	1.7	W
Total Power Dissipation[4] @T_A=70℃	P_D	1.1	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]	$R_{\theta JA}$	75	°C/W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	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=-250uA	BV_{DSS}	-40	-	-	V
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-10A	$R_{DS(ON)}$	-	-	15	mΩ
	V_{GS}=-10V, I_D=-10A T_J=125℃		-	-	23	
	V_{GS}=-4.5V, I_D=-8A		-	-	20	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.7	-	-2.5	V
Drain-Source Leakage Current	V_{DS}=-40V , V_{GS}=0V	I_{DSS}	-	-	-1	μA
	V_{DS}=-40V , V_{GS}=0V , T_J=55℃		-	-	-5	
Gate –Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
On state drain current	V_{GS}=-10V, V_{DS}=-5V	$ID_{(ON)}$	-120	-	-	A
Forward Transconductance	V_{DS}=-5V, I_D=-10A	G_{FS}	-	25	-	S
Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	Rg	2.5	-	6	Ω
Total Gate Charge(10V)	V_{DS}=-20V V_{GS}=-10V I_D=-10A	Q_g	-	42	55	nC
Total Gate Charge(4.5V)		Q_g	-	18.6	-	
Gate-Source Charge		Q_{gs}	-	7	-	
Gate-Drain Charge		Q_{gd}	-	8.6	-	
Turn-on delay time	V_{GS}=-10V, V_{DS}=-20V, R_L= 2Ω, R_{GEN}=3Ω	$t_{d(on)}$	-	9.4	-	ns
Rise Time		T_r	-	20	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	55	-	
Fall Time		t_f	-	30	-	
Input Capacitance	V_{DS}=-20V V_{GS}=0V f=1MHz	C_{iss}	-	2500	3000	pF
Output Capacitance		C_{oss}	-	260	-	
Reverse Transfer Capacitance		C_{rss}	-	180	-	
Body Diode Reverse Recovery Time	IF=-10A, dI/dt=100A/us	trr	-	38	49	ns
Body Diode Reverse Recovery Charge		Qrr	-	47	-	nC
Maximum Body-Diode Continuous Current		I_S	-	-	-3	A
Diode Forward Voltage	V_{GS}=0V , I_S=-1A	V_{SD}	-	-	-1	V

Note :

1、The static characteristics in Figures 1 to 6 are obtained using t ≤ 300us pulses, duty cycle 0.5% max.

Ratings and Characteristic Curves

■ Typical Characterisitics

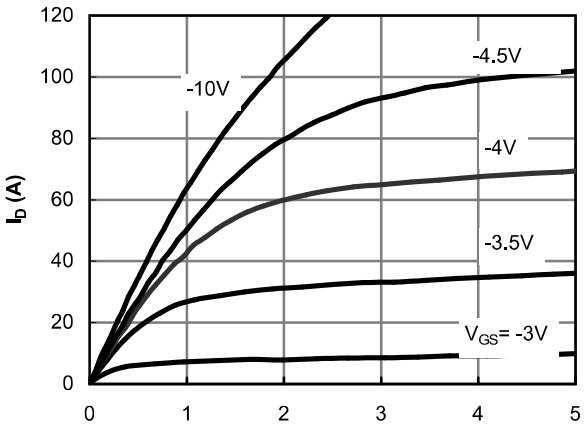

Figure 1: On-Region Characteristics

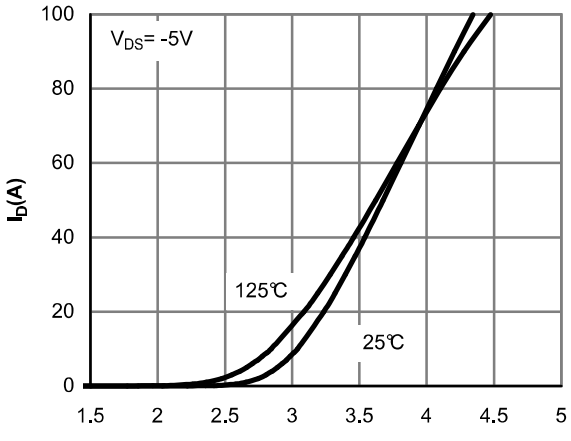

Figure 2: Transfer Characteristics

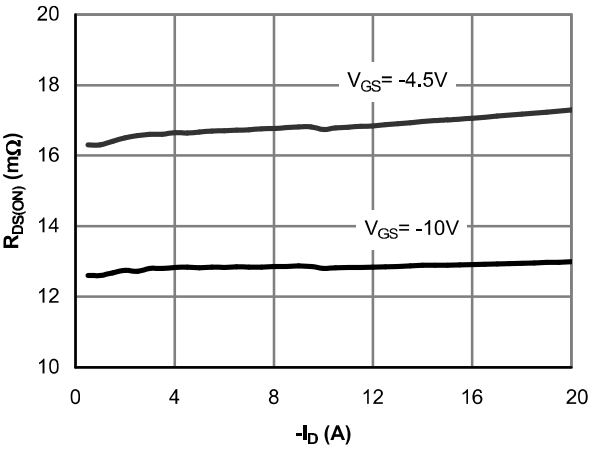

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

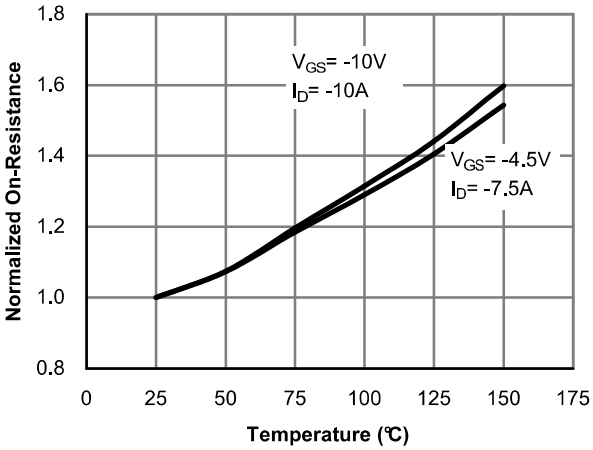

Figure 4: On-Resistance vs. Junction Temperature

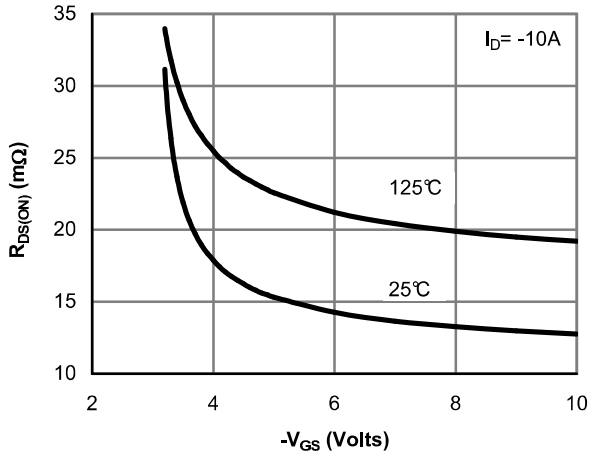

Figure 5: On-Resistance vs. Gate-Source Voltage

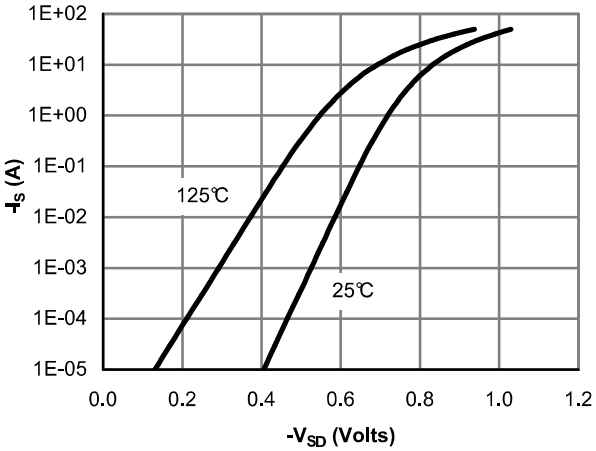

Figure 6: Body-Diode Characteristics

Ratings and Characteristic Curves

■ Typical Characterisitics

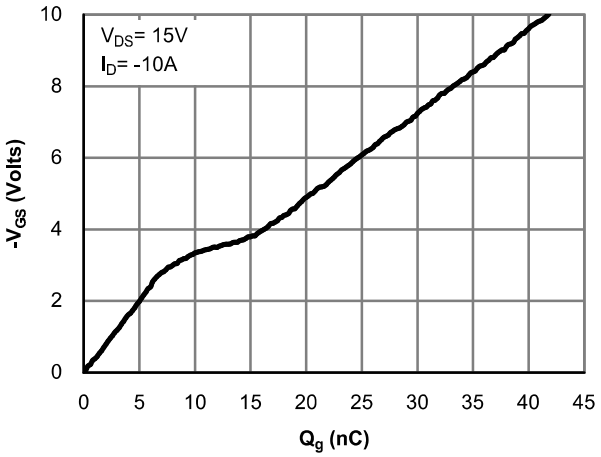

Figure 7: Gate-Charge Characteristics

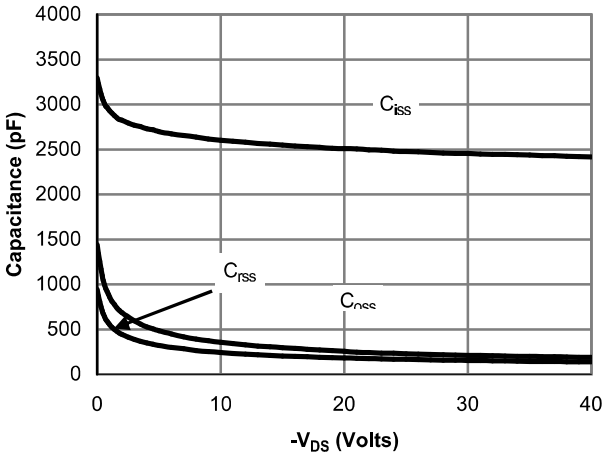

Figure 8: Capacitance Characteristics

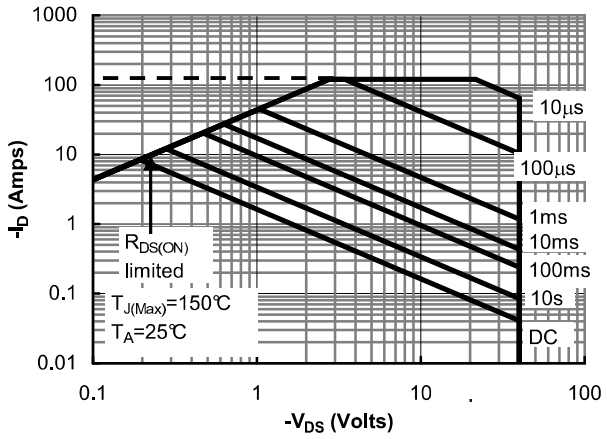

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

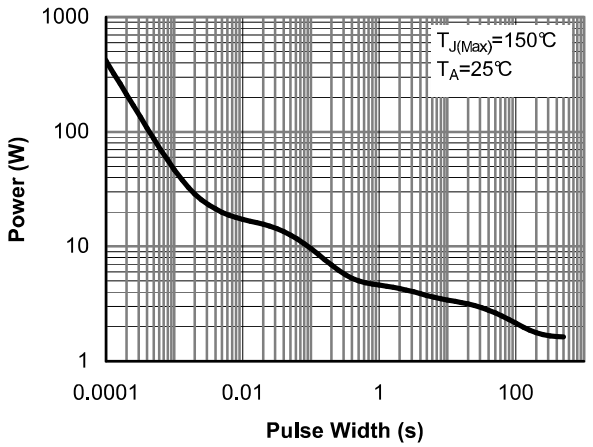

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

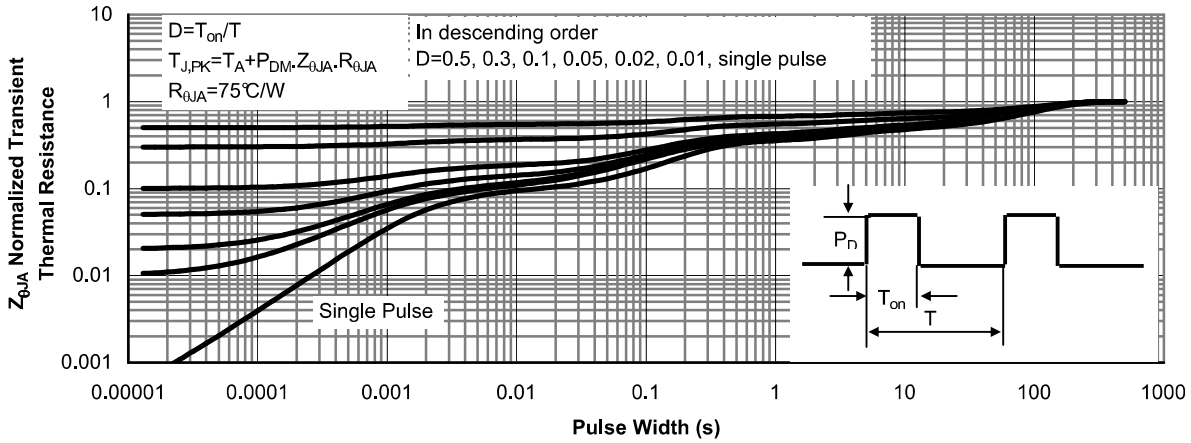

Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)

Package Outline Dimensions Millimeters

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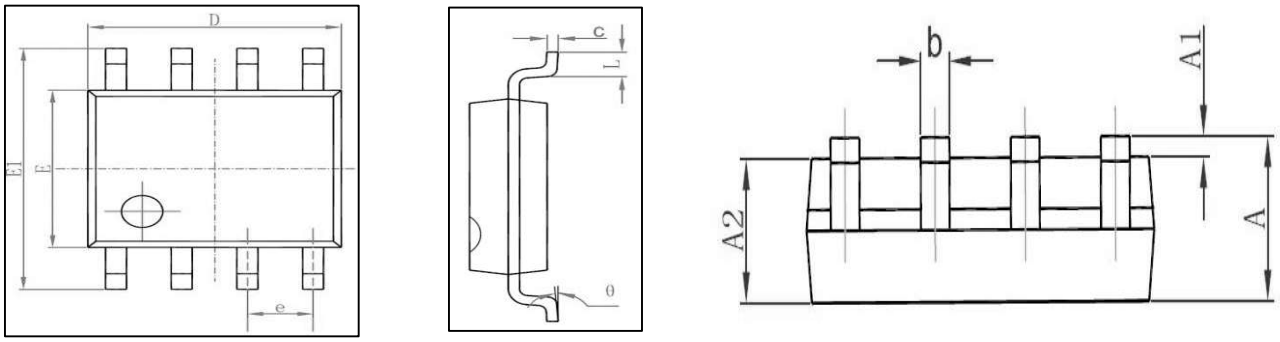

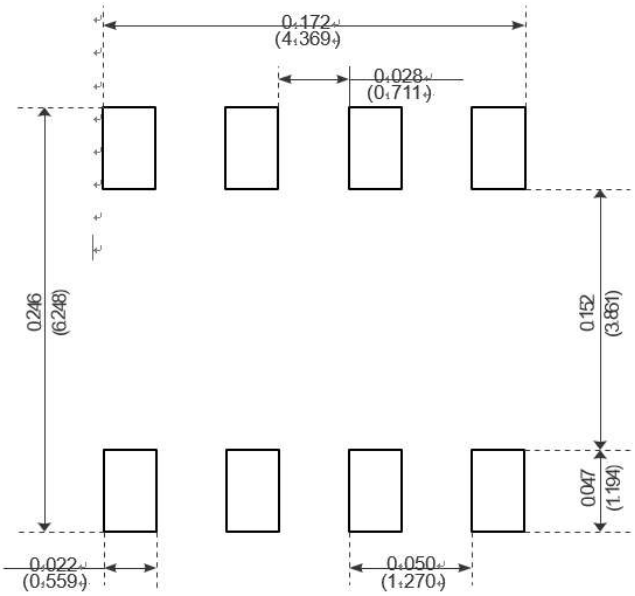

Recommended Minimum Pads

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°