

P-Channel 100V(D-S) MOSFET

Product summary

V_{DS}	-100	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$) Typ.	170	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	180	m Ω
I_D ($T_C=25^{\circ}C$)	-12	A

Features

- Low C_{rss}
- Fast switching
- Low On-resistance $R_{DS(on)}$

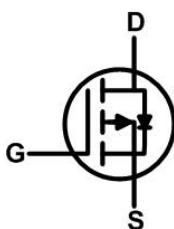
Applications

- Load Switch
- Power management

Pin Configuration



TO-252



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECFA12P10A	TO-252	13"	2500pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V _{DS}	Drain-Source Voltage		-100	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C =25°C	-12	A
		T _C =100°C	-7.6	A
I _{DM}	Pulse Drain Current Tested ^A		-48	A
E _{AS}	Avalanche energy ^B		28	mJ
P _D	Power Dissipation	T _C =25°C	45	W
T _J ,T _{STG}	Junciton and Storage Temperature Range		-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^C	50	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to case max	2.8	$^{\circ}C/W$

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-100V, V_{GS}=0V$	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.5	--	-2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ^D	$V_{GS}=-10V, I_D=-7.5A$	--	170	220	m Ω
		$V_{GS}=-4.5V, I_D=-7A$	--	180	240	m Ω
V_{SD}	Forward Voltage ^D	$I_S=-7A, V_{GS}=0V$	--	--	-1.2	V
Dynamic Parameters ^E						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-25V$ $f=1\text{MHz}$	--	1330	--	pF
C_{oss}	Output Capacitance		--	60	--	pF
C_{rss}	Reverse Transfer Capacitance		--	41	--	pF
Q_g	Total Gate Charge	$V_{DS}=-50V, I_D=-10A$ $V_{GS}=-10V$	--	26	--	nC
Q_{gs}	Gate-Source Charge		--	4.8	--	nC
Q_{gd}	Gate-Drain Charge		--	5	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-50V$ $V_{GS}=-10V, R_G=5\Omega,$ $I_D=-10A$	--	8.7	--	ns
t_r	Turn-on Rise Time		--	35	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	80	--	ns
t_f	Turn-off Fall Time		--	48	--	ns
t_{rr}	Reverse recovery time	$I_F=-10A,$ $di/dt=100\text{ A/uS}$	--	35	--	ns
Q_{rr}	Reverse recovery charge		--	19	--	nC

Note:

- A. Repetitive rating: pulse width limited by maximum junction temperature.
- B. The E_{AS} data shows Max. rating . The test condition is $T_J=25^\circ\text{C}, V_{DD}=-50V, L=0.5\text{mH}, V_G=-10V$.
- C. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- D. The data tested by pulsed, Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
- E. Guaranteed by design, not subject to production testing.

Typical Characteristics

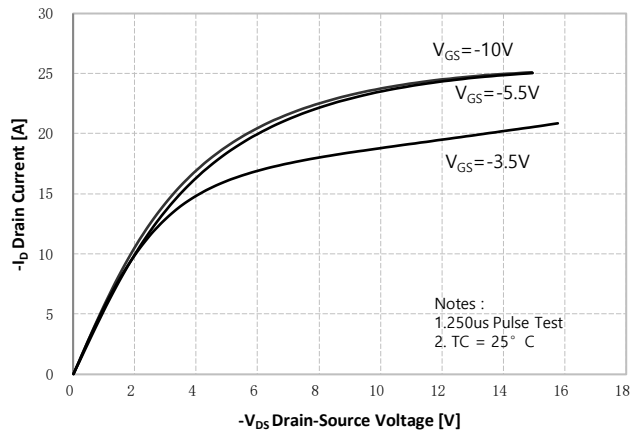


Figure 1. On-Region Characteristics

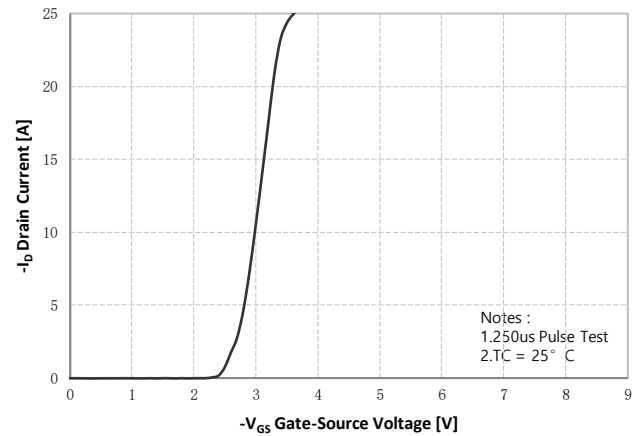


Figure 2. Transfer Characteristics

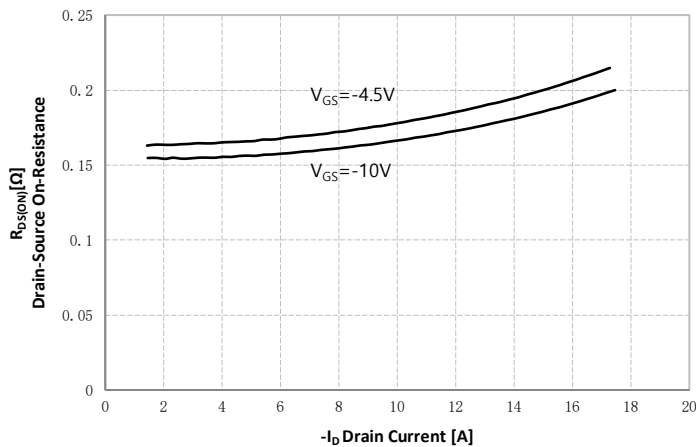


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

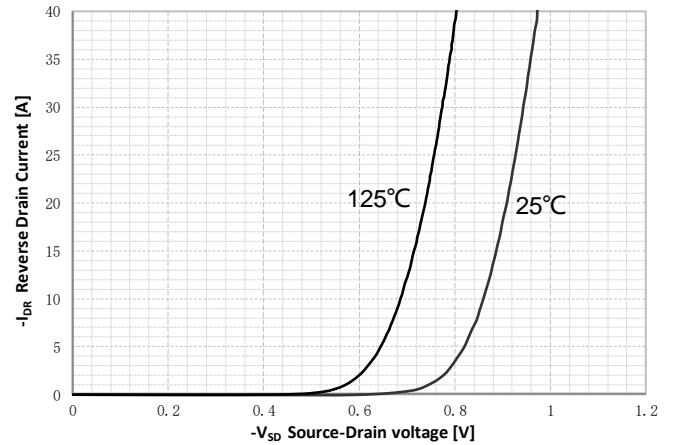


Figure 4. Body Diode Forward Voltage Variation with Current

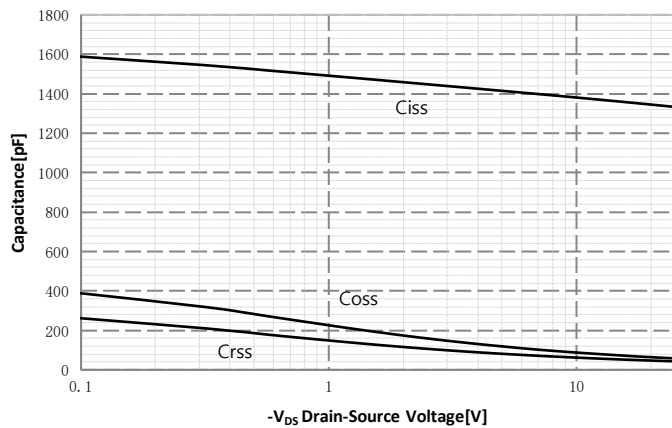


Figure 5. Capacitance Characteristics

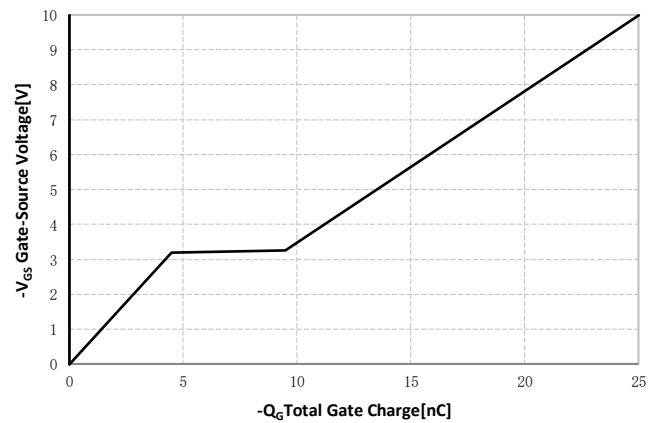


Figure 6. Gate Charge Characteristics

Typical Characteristics

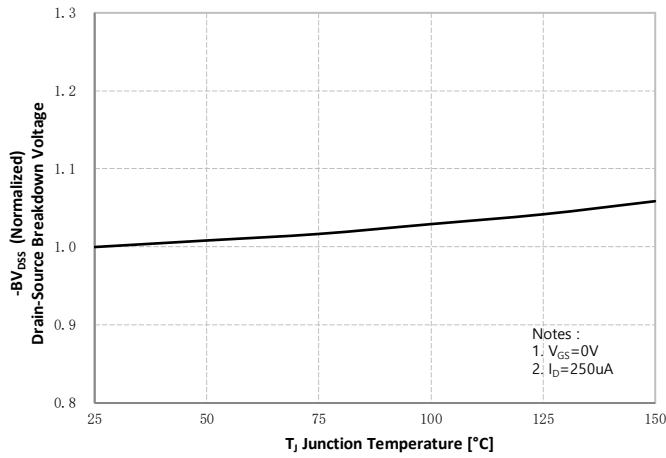


Figure 7. Breakdown Voltage Variation vs Temperature

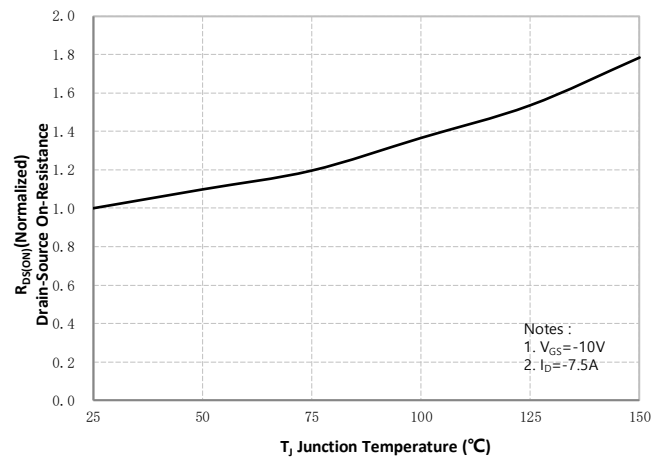


Figure 8. On-Resistance Variation vs Temperature

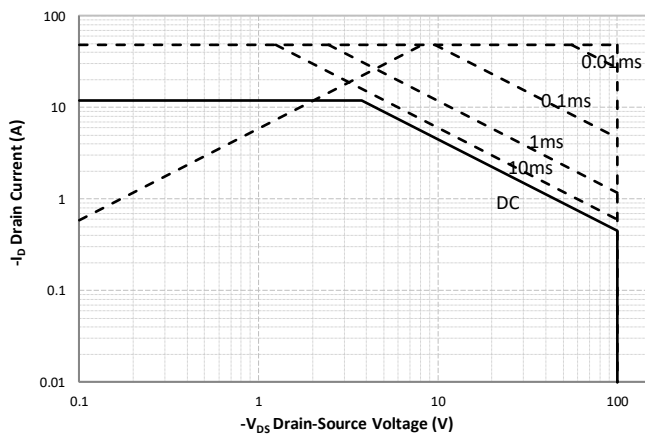


Figure 9. Maximum Safe Operating Area³⁾

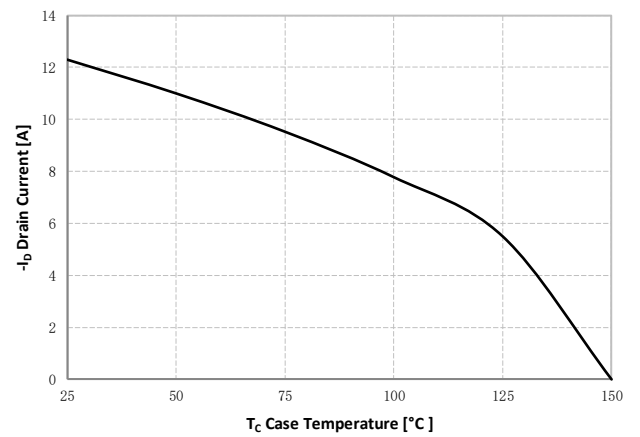


Figure 10. Maximum Drain Current vs Case Temperature

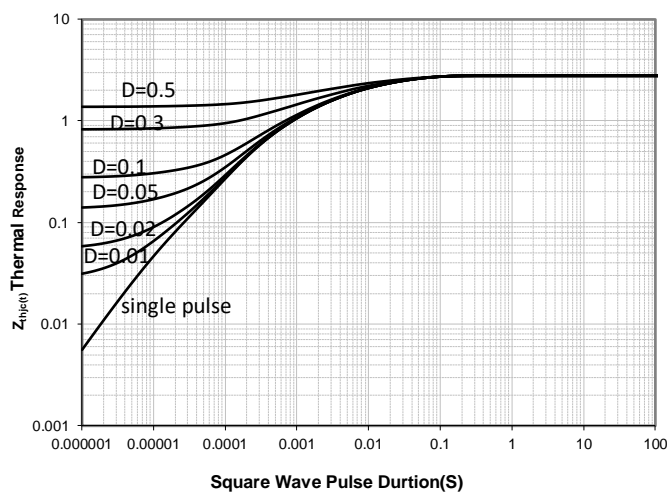
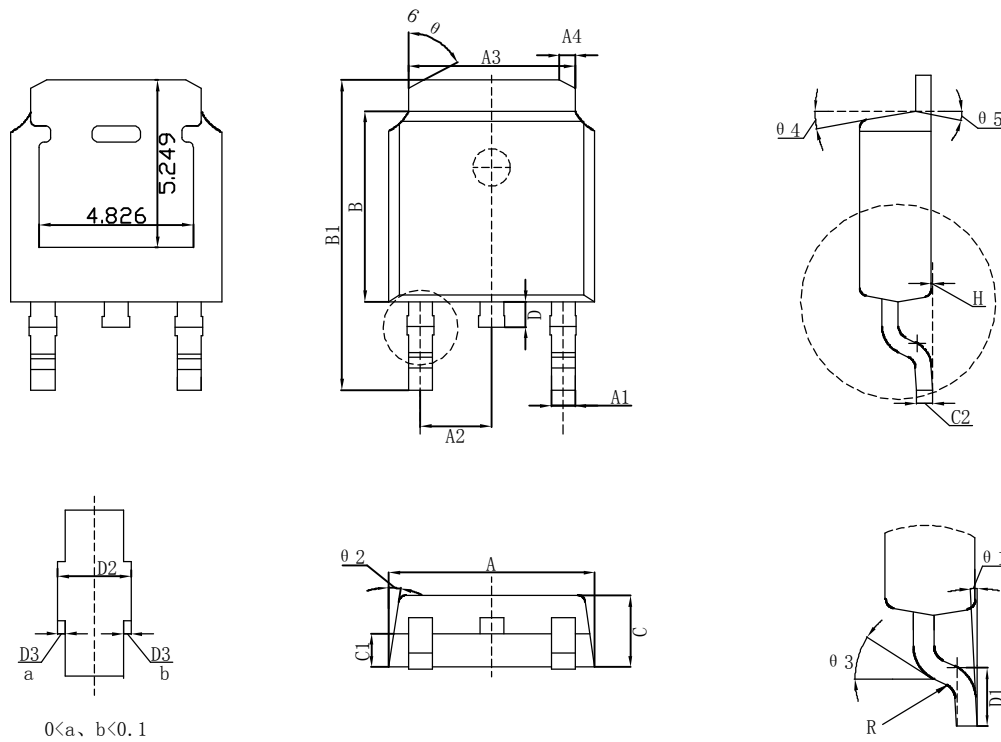


Figure 11. Transient Thermal Response Curve

TO-252 Package Information



尺寸 标注	最小 (mm)	最大 (mm)	尺寸 标注	最小 (mm)	最大 (mm)
A	6.50	6.70	D1	1.40	1.60
A1	0.71	0.81	D2	0.81	0.91
A2	2.236	2.336	D3	0.05TYP	
A3	5.284	5.384	H	0.00	0.10
A4	0.75	0.85	R	0.40TYP	
B	6.00	6.20	θ 1	0° — 8°	
B1	9.80	10.10	θ 2	8.5° TYP4	
C	2.20	2.40	θ 3	25° TYP	
C1	0.967	1.087	θ 4	10° TYP2	
C2	0.498	0.518	θ 5	10° TYP	
D	0.70	0.90	θ 6	70° TYP	