

## P-Channel 100V(D-S) MOSFET

Product summary		
$V_{DS}$	-100	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$ ) Typ.	75	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$ ) Typ.	85	m $\Omega$
$I_D(T_C=25^\circ C)$	-18	A

### Features

- Spit Gate Trench MOSFET technology
- Extremely low switching loss
- Excellent stability and uniformity

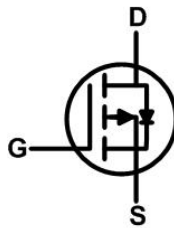
### Applications

- Portable equipment
- Power management

### Pin Configuration



TO-252



### Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECFA18P10A	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	$\pm 20$	V	
$I_D$	Continuous Drain Current <sup>A</sup>	$T_C=25^\circ C$	-18	A
		$T_C=70^\circ C$	-12	A
$I_{DM}$	Pulse Drain Current Tested <sup>B</sup>	-72	A	
$E_{AS}$	Avalanche energy <sup>C</sup>	100	mJ	
$P_D$	Power Dissipation <sup>D</sup>	$T_C=25^\circ C$	72	W
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to +150	$^\circ C$	

### Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient <sup>A</sup>	45	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to case max <sup>A</sup>	1.7	$^\circ C/W$

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
<b>Static Parameters</b>						
$BV_{DSS}$	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	$\mu A$
	Zero Gate Voltage Drain Current $T_J=125^\circ\text{C}$	$V_{DS}=-100V, V_{GS}=0V$	--	--	-10	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.8	-2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance <sup>B</sup>	$V_{GS}=-10V, I_D=-10A$	--	75	90	m $\Omega$
		$V_{GS}=-4.5V, I_D=-5A$	--	85	110	m $\Omega$
$V_{SD}$	Forward Voltage <sup>B</sup>	$I_S=-10A, V_{GS}=0V$	--	--	-1.3	V
<b>Dynamic Parameters <sup>E</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=-50V$ $f=1\text{MHz}$	--	1051	--	pF
$C_{oss}$	Output Capacitance		--	119	--	pF
$C_{rss}$	Reverse Transfer Capacitance		--	25	--	pF
$Q_g$	Total Gate Charge	$V_{DS}=-50V, I_D=-5A$ $V_{GS}=-10V$	--	20.1	--	nC
$Q_{gs}$	Gate-Source Charge		--	3.9	--	nC
$Q_{gd}$	Gate-Drain Charge		--	4.3	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-50V$ $V_{GS}=-10V, R_G=6\Omega,$ $R_L=2.5\Omega$	--	10	--	ns
$t_r$	Turn-on Rise Time		--	30	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	77	--	ns
$t_f$	Turn-off Fall Time		--	81	--	ns
$t_{rr}$	Reverse recovery time	$I_F=-5A,$ $di/dt=100\text{ A/uS}$	--	140	--	ns
$Q_{rr}$	Reverse recovery charge		--	70	--	nC

Note:

- A. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 20Z copper.
- B. The data tested by pulsed, Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
- C. The  $E_{AS}$  data shows Max. rating . The test condition is  $V_{DD}=-50V, L=0.5\text{mH}, R_G=25\Omega$ .
- D. The power dissipation is limited by  $150^\circ\text{C}$  junction temperature.
- E. Guaranteed by design, not subject to production testing.

Typical Characteristics

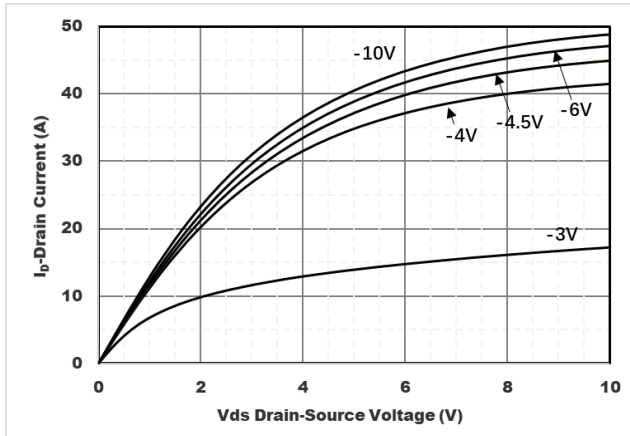


Figure1. Output Characteristics

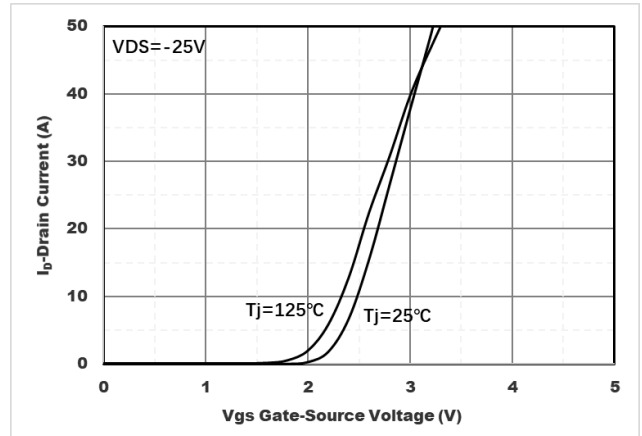


Figure2. Transfer Characteristics

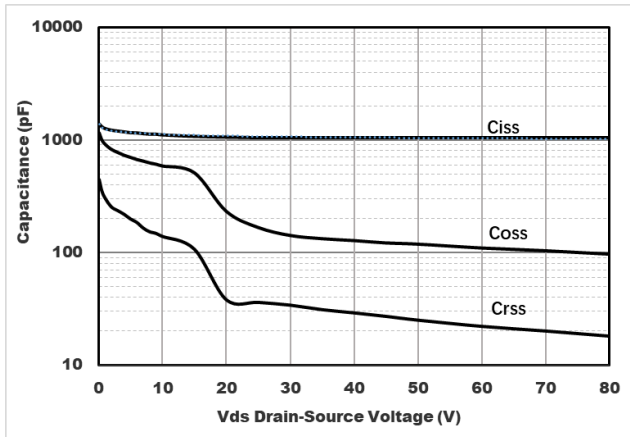


Figure3. Capacitance Characteristics

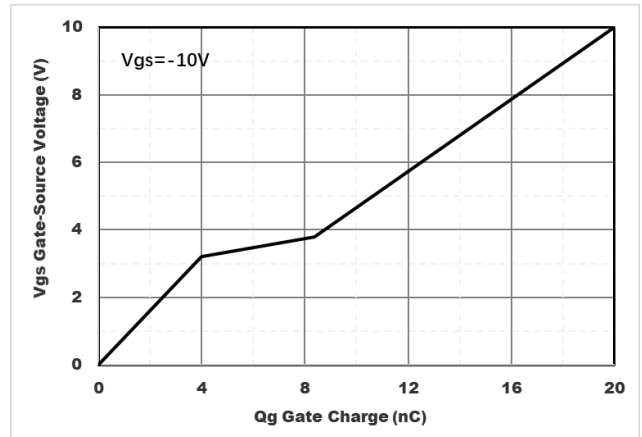


Figure4. Gate Charge

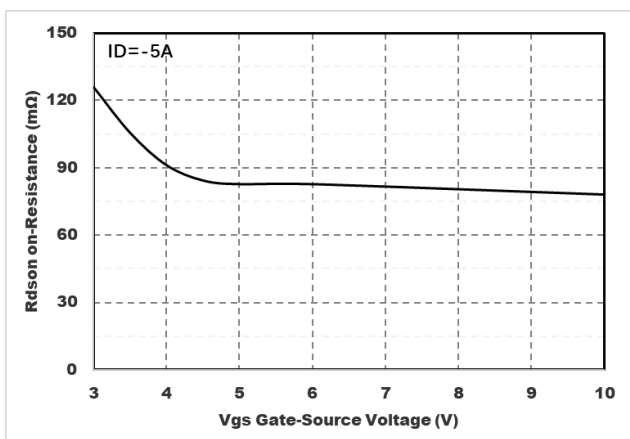


Figure5. : On-Resistance vs. Gate to Source Voltage

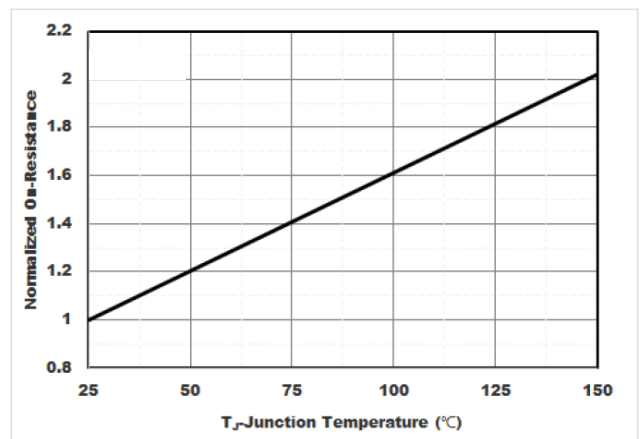


Figure6. Normalized On-Resistance

Typical Characteristics

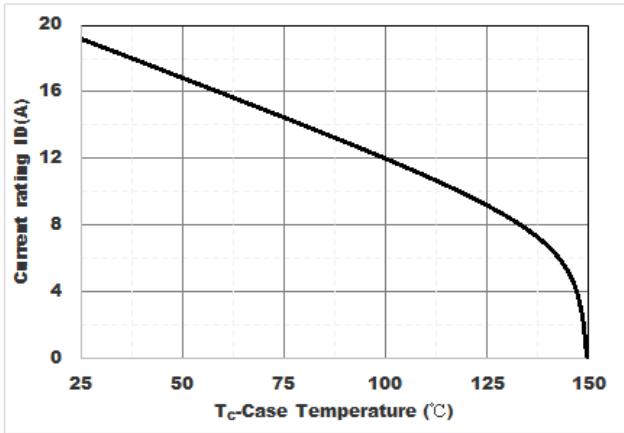


Figure7. Drain current

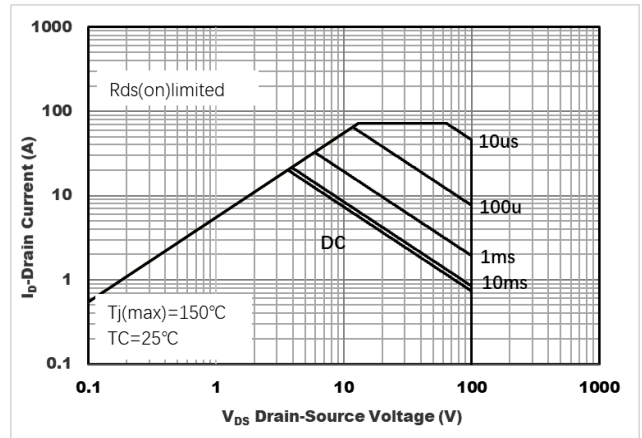


Figure8.Safe Operation Area

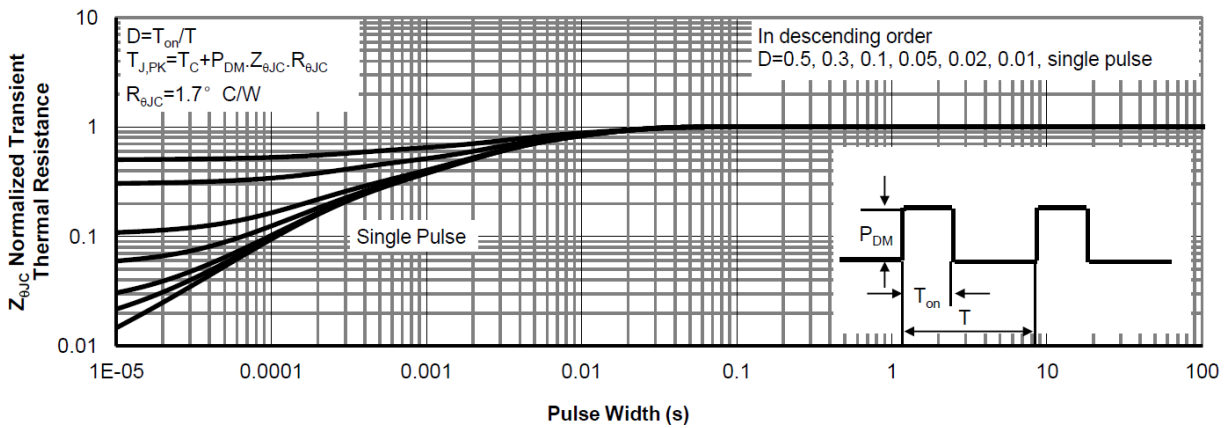
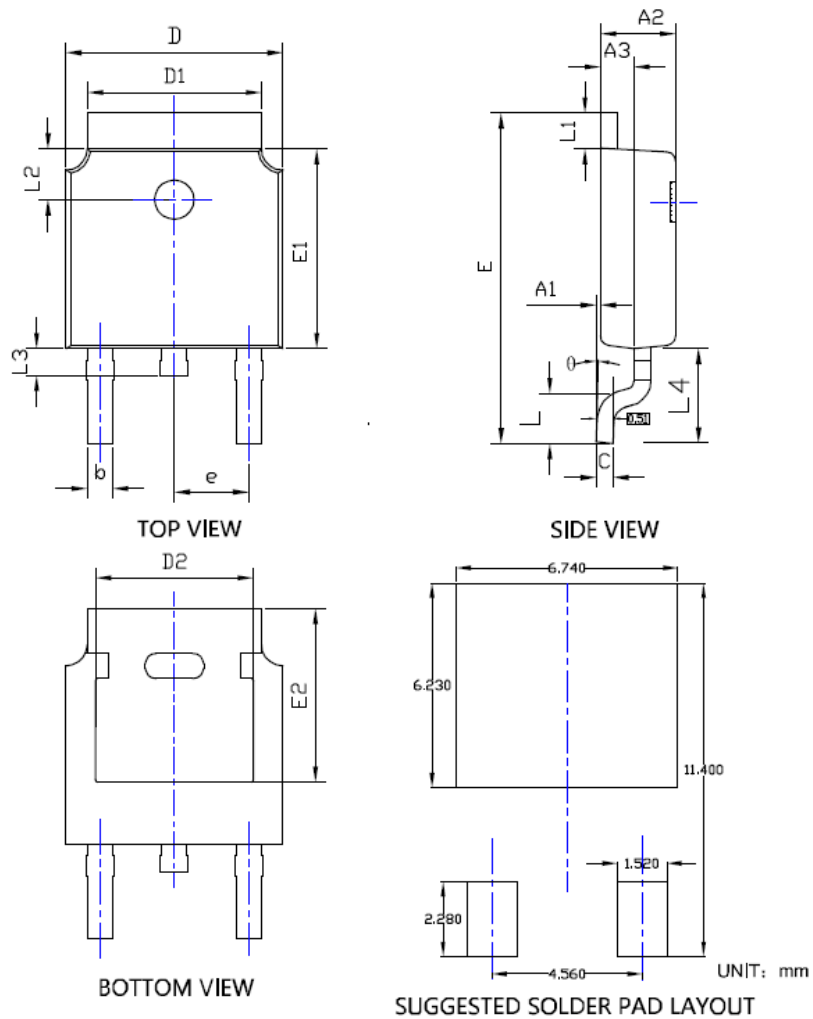


Figure9.Normalized Maximum Transient thermal impedance

**TO-252 Package Information**


DIMENSIONS						
SYMBOL	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.240	0.310	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°