

P-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	-20	V
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	465	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$) Typ.	610	m Ω
I_D ($T_A=25^{\circ}C$)	-0.5	A

Features

- Low Threshold Voltage
- ESD protection up to 2 kV
- Small package DFN1006-3L

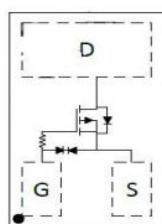
Applications

- Small Signal Switching
- DC-DC converter circuit

Pin Configuration



DFN1006-3L



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECAD2005	DFN1006-3L	7"	10000pcs

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

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		-20	V
V_{GS}	Gate-Source Voltage		± 8	V
I_D	Continuous Drain Current ^A	$T_A=25^{\circ}C$	-0.5	A
		$T_A=70^{\circ}C$	-0.4	A
I_{DM}	Pulse Drain Current Tested ^B		-1.2	A
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.3	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 ^A	416	$^{\circ}C/W$

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 =-250uA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V,V _{GS} =0V	--	--	-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V,V _{GS} =±8V	--	--	±10	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250uA	-0.4	--	-1.0	V
R _{DS(ON)}	Drain-Source On-State Resistance ^D	V _{GS} =-4.5V,I _D =-0.5A	--	465	600	mΩ
		V _{GS} =-2.5V,I _D =-0.4A	--	610	780	mΩ
		V _{GS} =-1.8V,I _D =-0.3A	--	860	1120	mΩ
V _{SD}	Forward Voltage	I _{SD} =-0.5A,V _{GS} =0V	--	--	-1.1	V
Dynamic Parameters						
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =-10V f=1MHZ	--	65	--	pF
C _{oss}	Output Capacitance		--	9.5	--	pF
C _{rss}	Reverse Transfer Capacitance		--	9.8	--	pF
Switching Parameters						
Q _g	Total Gate Charge	V _{DS} =-10V,I _D =-0.5A V _{GS} =-4.5V	--	0.85	--	nC
Q _{gs}	Gate-Source Charge		--	0.22	--	nC
Q _{gd}	Gate-Drain Charge		--	0.23	--	nC
t _{D(on)}	Turn-on Delay Time	V _{DS} =-10V I _D =-0.5A, V _{GS} =-4.5V, R _{GEN} =6Ω	--	48	--	ns
t _r	Turn-on Rise Time		--	142	--	ns
t _{D(off)}	Turn-off Delay Time		--	1420	--	ns
t _f	Turn-off Fall Time		--	2100	--	ns

A. Device mounted on FR-4 PCB, 1 inch x 1 inch x 0.062 inch.

B. Pulse width < 380 μs , Single pulse

C. Maximum junction temperature $T_J=150^{\circ}\text{C}$.

D. Pulse test: Pulse width < 380 μs duty cycle < 2%.

Typical Characteristics

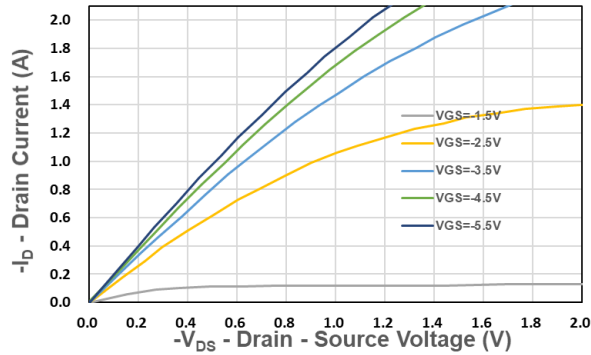


Figure 1. Output Characteristics

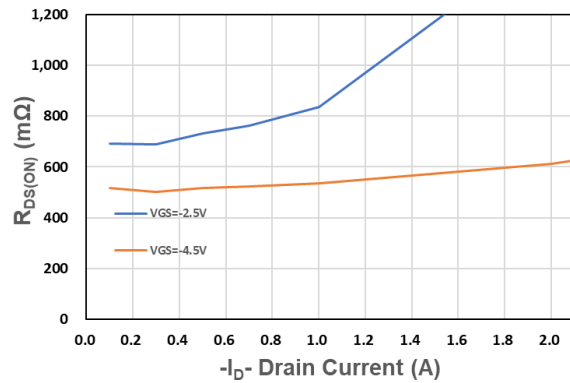


Figure 2. On-Resistance vs. I_D

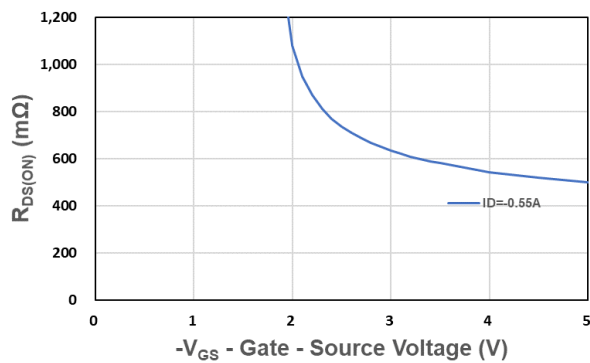


Figure 3. On-Resistance vs. V_{GS}

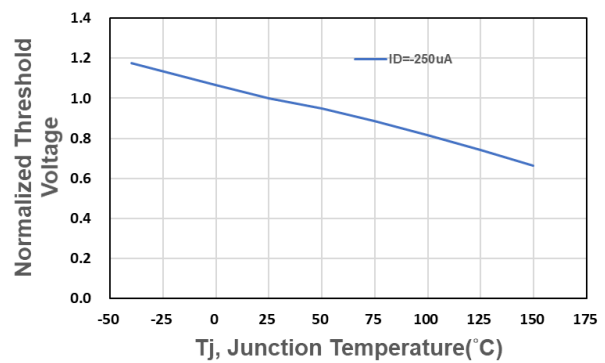


Figure 4. Gate Threshold Voltage

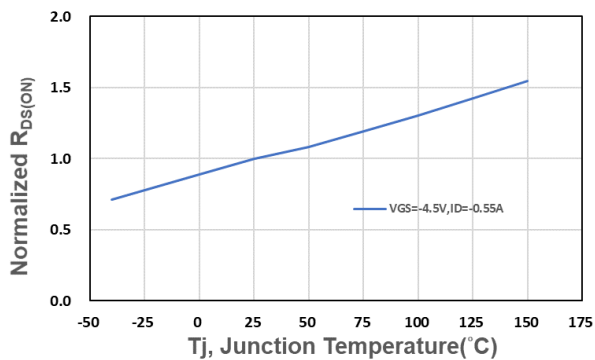


Figure 5. Drain-Source On Resistance

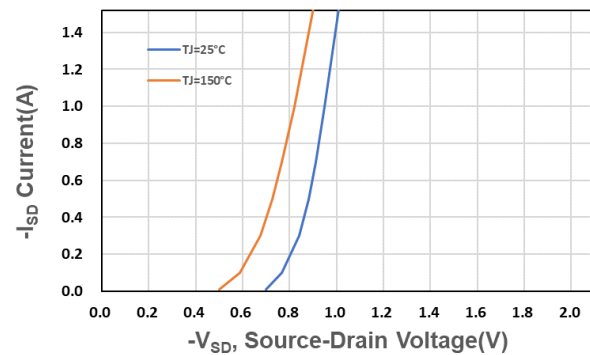


Figure 6. Source-Drain Diode Forward

Typical Characteristics

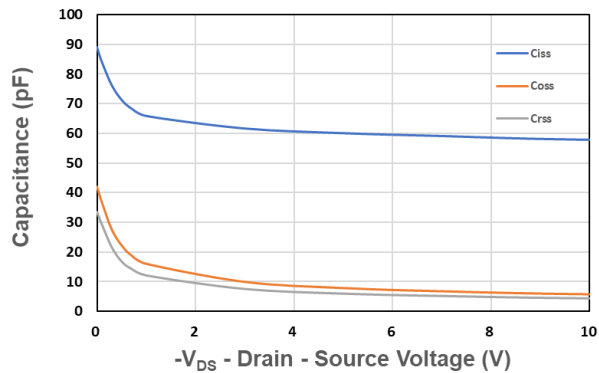


Figure 7. Capacitance

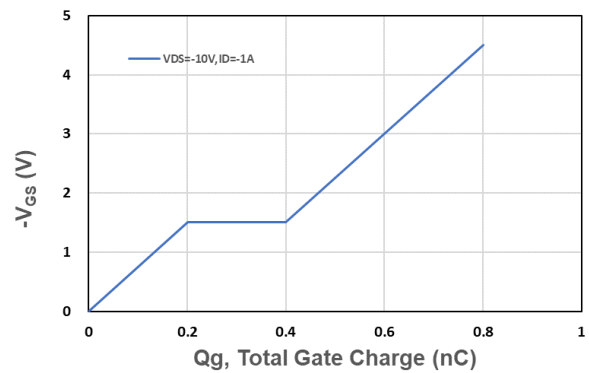


Figure 8. Gate Charge Characteristics

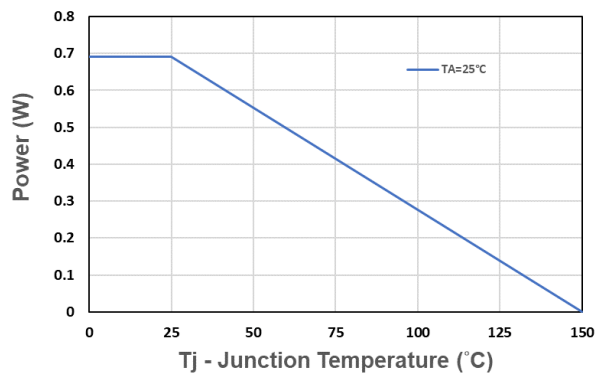


Figure 9. Power Dissipation

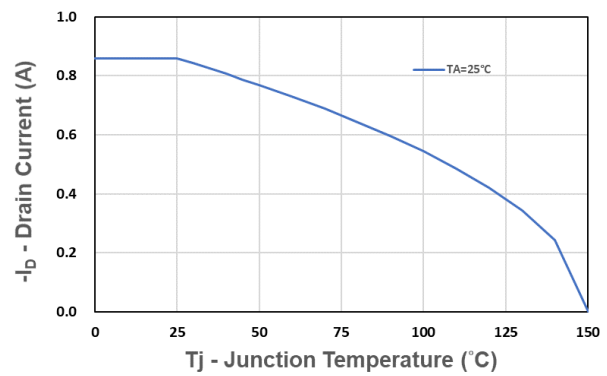


Figure 10. Drain Current

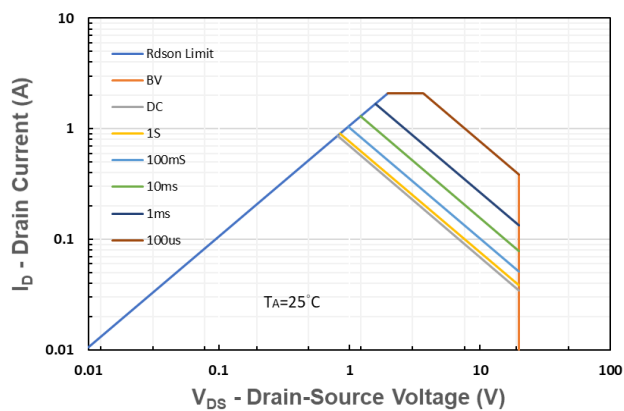


Figure 11. Safe Operating Area

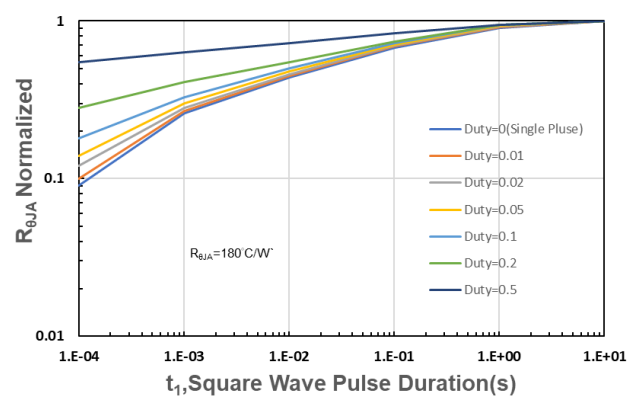
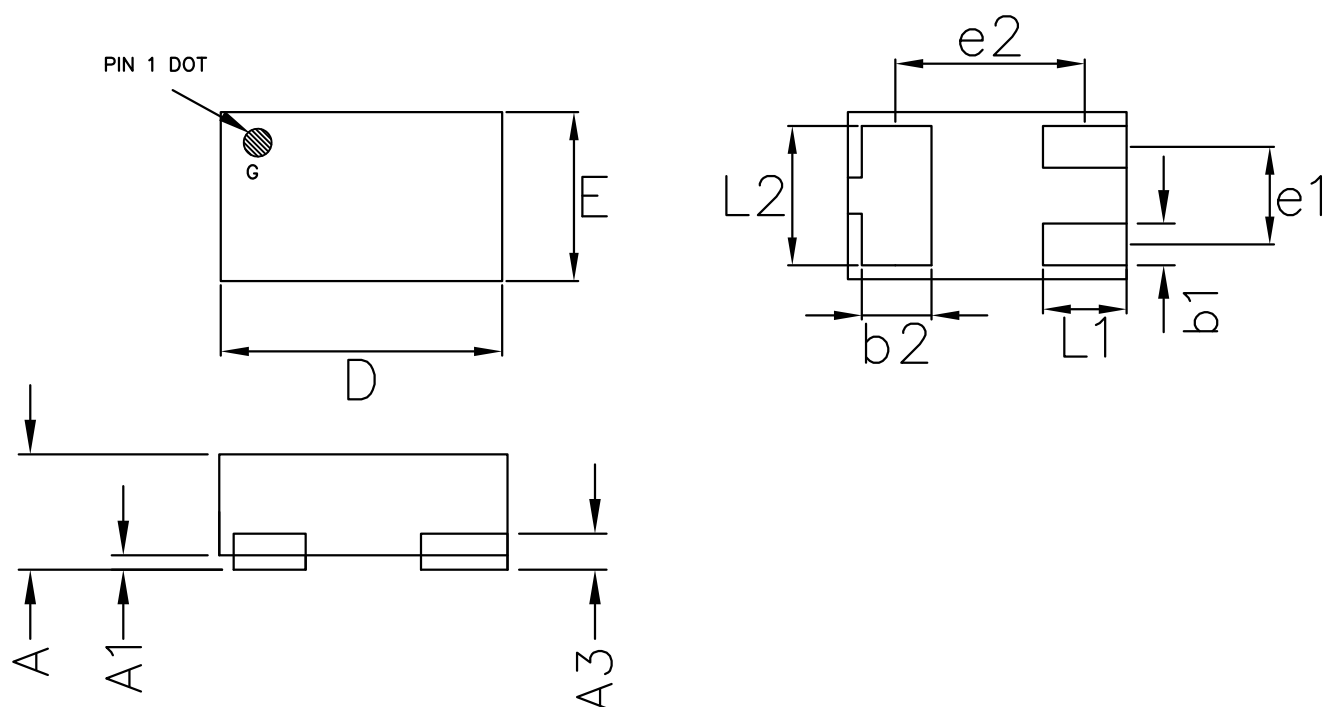


Figure 12. $R_{\theta JA}$ Transient Thermal Impedance

DFN1006-3L Package Information



COMMON DIMENSIONS(MM)			
PKG.	X1: EXTREME THIN		
REF.	MIN.	NOM.	MAX
A	>0.40	—	0.55
A1	0.00	—	0.05
A3	0.125 REF.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e1	0.35 BSC		
e2	0.675 BSC		