

Descriptions

This is -30V -37A P-CHANNEL MOSFET in PDFN3*3-8L Package.

Features

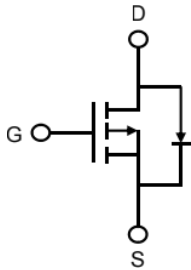
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
-30	11@ $V_{GS} = -10V$	-37
	15@ $V_{GS} = -4.5V$	

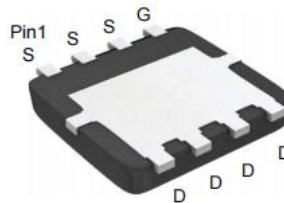
Applications

- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers

Equivalent Circuit & Pinning



Circuit Diagram



PDFN3*3-8L

Absolute Maximum Ratings($T_a=25^\circ C$)

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-37	A
Pulsed Drain Current ¹⁾	I_{DM}	-140	A
Total Power Dissipation	P_D	35.6	W
Avalanche Current ²⁾	I_{AS}	-36.5	A
Avalanche Energy ²⁾	E_{AS}	66.74	mJ
Thermal Resistance , Junction-case ³⁾	$R_{\theta JC}$	7.87	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ³⁾	$R_{\theta JA}$	44.8	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

Electrical Characteristic Curve

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics ⁴⁾						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.2	-1.6	-2.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -7A$	-	11	15	m Ω
		$V_{GS} = -4.5V, I_D = -6A$	-	15	20	
Forward Transconductance	g_{FS}	$V_{DS} = -10V, I_D = -10A$	20	-	-	S
Dynamic Characteristics ⁵⁾						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz$	-	1207	-	pF
Output Capacitance	C_{oss}		-	170	-	
Reverse Transfer Capacitance	C_{rss}		-	146	-	
Switching Characteristics ⁵⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = -15V, V_{GS} = -10V, R_G = 1\Omega, I_D = -10A$	-	10	-	ns
Turn-on Rise Time	t_r		-	5.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	
Turn-Off Fall Time	t_f		-	9.0	-	
Total Gate Charge	Q_g	$V_{DS} = -15V, V_{GS} = -10V, I_D = -10A$	-	25.8	-	nC
Gate-Source Charge	Q_{gs}		-	3.9	-	
Gate-Drain Charge	Q_{gd}		-	5.2	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ⁴⁾	V_{SD}	$V_{GS} = 0V, I_S = -2A$	-0.4	-	-1.0	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
3. This single-pulse measurement was taken under the following condition [$L=100\mu H, V_{GS}=-10V, V_{DS}=-30V$] while it's value is limited by $T_{J_Max}=150^\circ C$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
5. Guaranteed by design, not subject to production.

Electrical Characteristic Curve

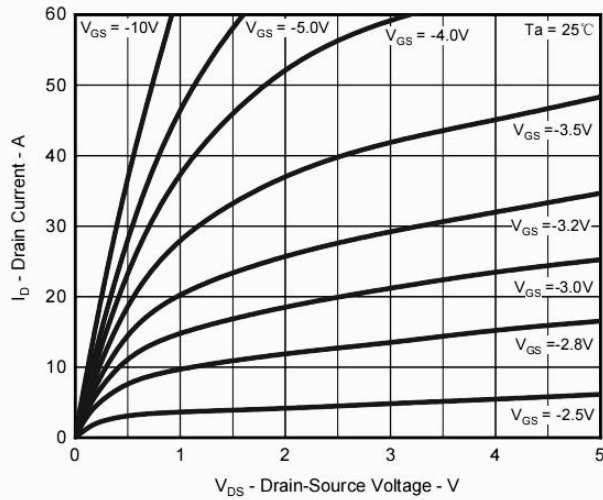


Fig.1 Output Characteristics

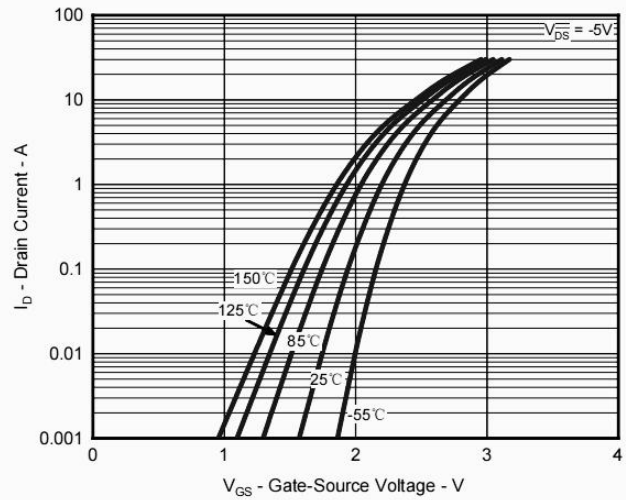


Fig.2 Typical Transfer Characteristic

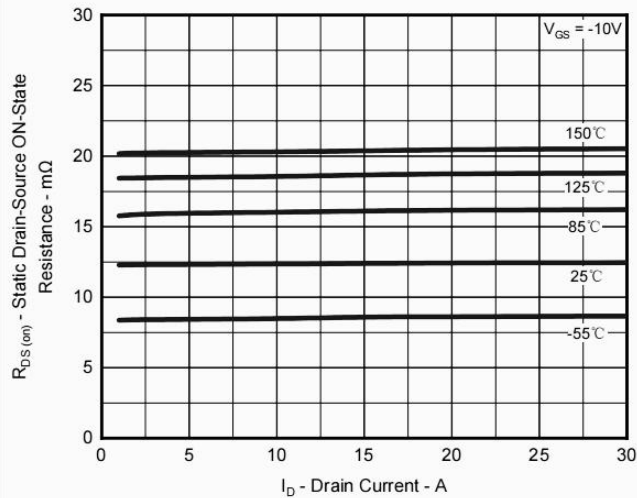


Fig.3 Typical On-Resistance vs Drain Current and Temperature

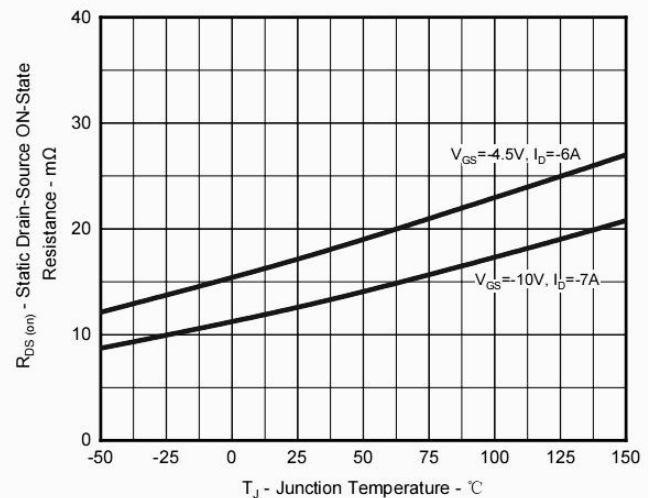


Fig.4 On-Resistance Variation with Temperature

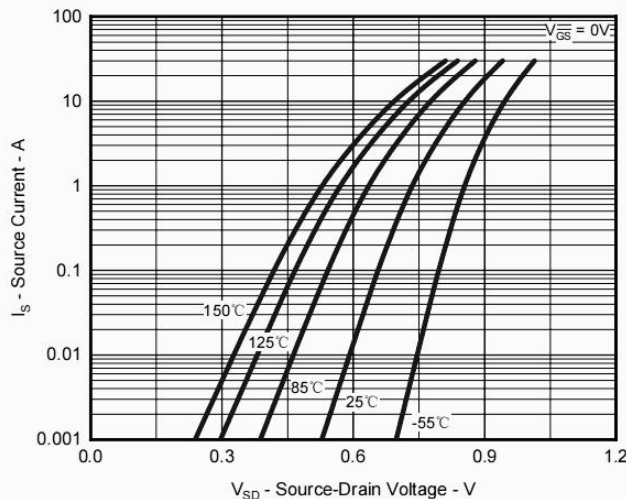


Fig.5 Diode Forward Voltage vs. Current

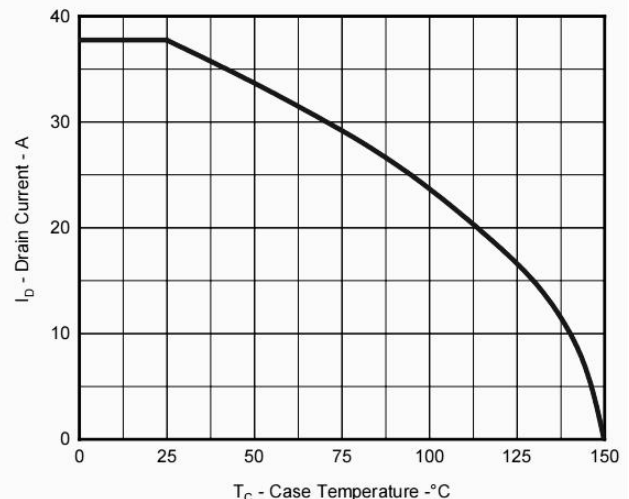
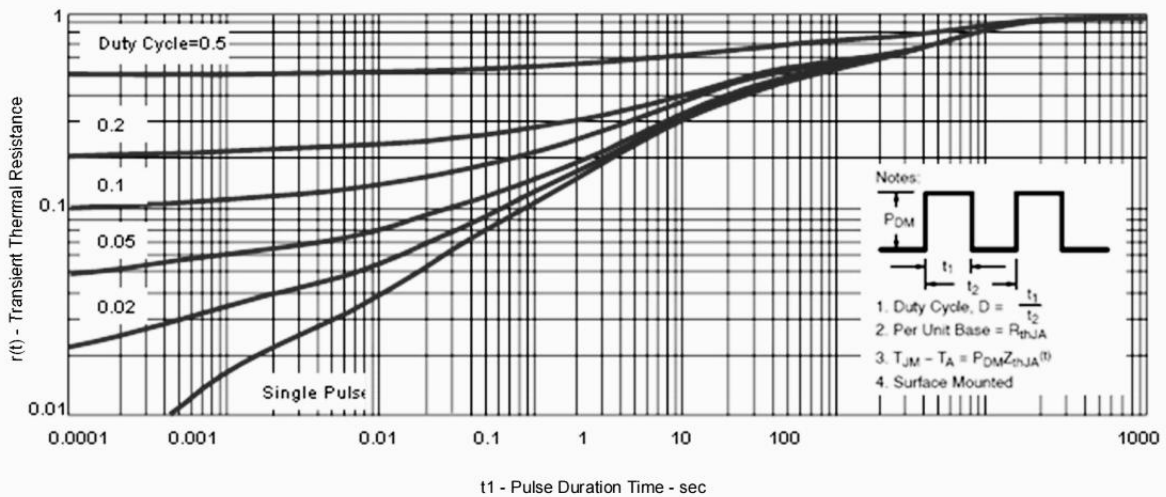
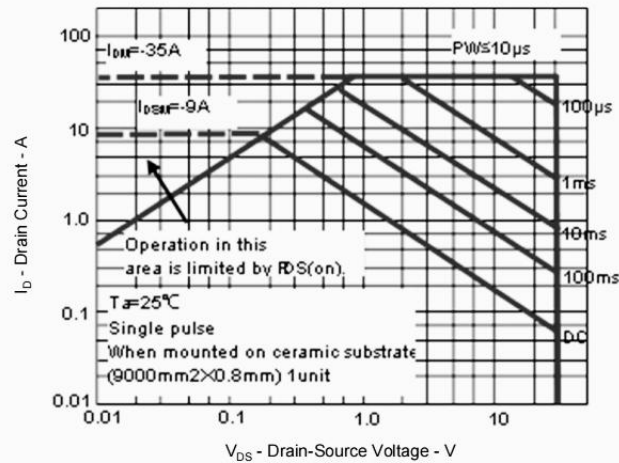
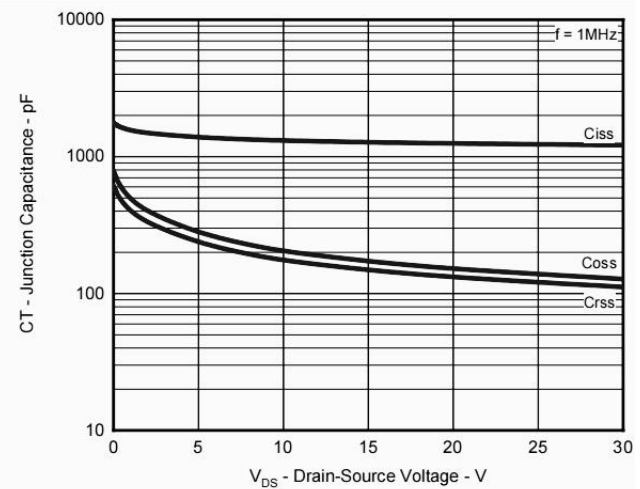
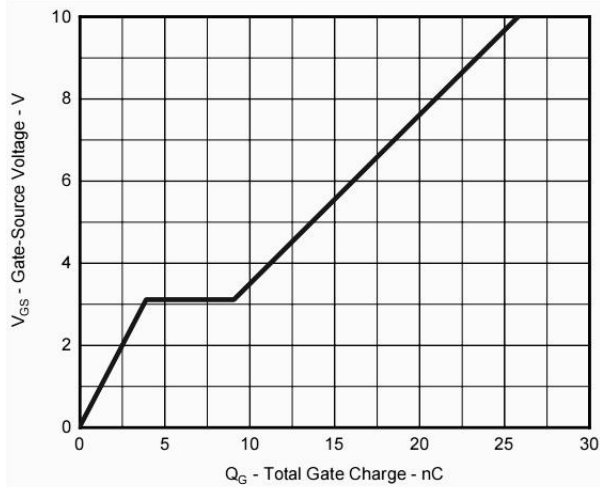
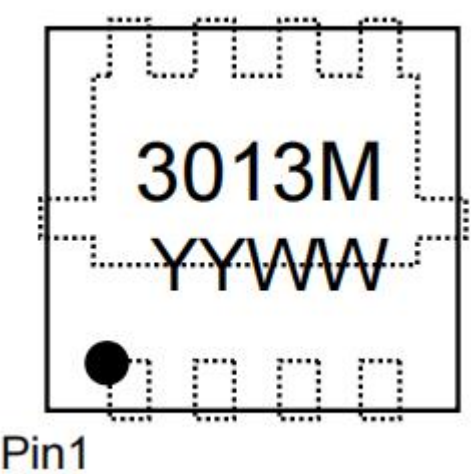


Fig.6 Maximum Drain Current vs. Case Temperature

Electrical Characteristic Curve



Marking Instructions

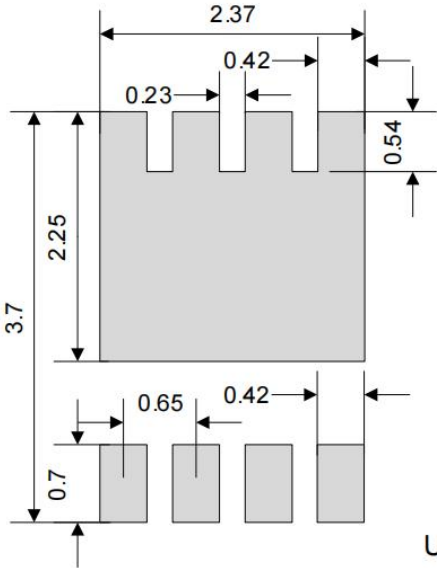
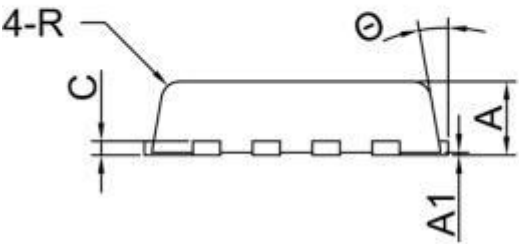
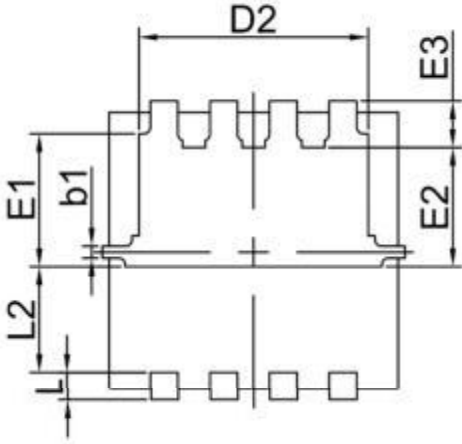
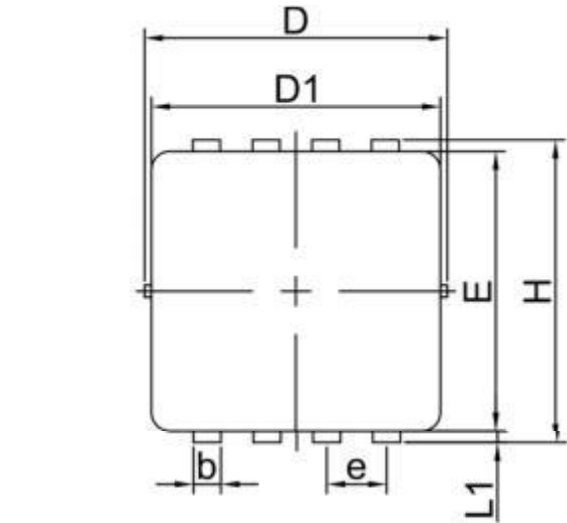


Note:
3013M: Product Type.

Packaging SPEC

Device	Package	Reel	Shipping
CTCS150P03YA	PDFN3*3-8L	13"	5000 / Tape & Reel

Package Outline Dimensions



Suggested PCB Layout

Unit: mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
b	0.24	0.35	0.009	0.014
B1	0.08	0.18	0.003	0.007
c	0.152 Ref.		0.006 Ref.	
D	3.25	3.40	0.128	0.134
D1	3.05	3.25	0.120	0.128
D2	2.40	2.60	0.094	0.102
E	3.00	3.20	0.118	0.126
E1	1.35	1.55	0.053	0.061
E2	1.20	1.40	0.047	0.055
E3	0.40	0.60	0.016	0.024
e	0.65 BSC		0.026 BSC	
H	3.20	3.40	0.126	0.134
L	0.30	0.50	0.012	0.020
L1	0.10	0.20	0.004	0.008
L2	1.13 Ref.		0.044 Ref.	
R	0.20 Ref.		0.008 Ref.	
θ	6°	14°	6°	14°

Load With Information

