

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-12V	5.7mΩ@-4.5V	-34A
	6.0mΩ@-3.7V	
	7.0mΩ@-2.5V	
	10.0mΩ@-1.8V	

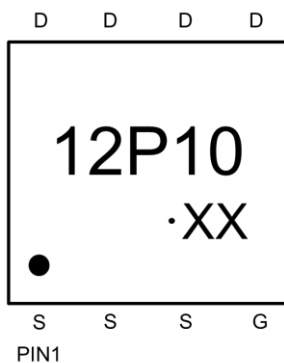
Feature

- High cell density trench P-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

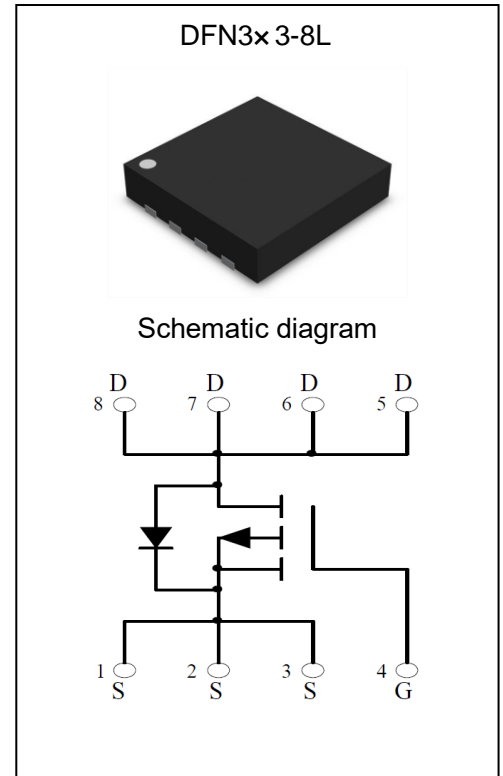
Application

- Battery protection applications
- Load switch

MARKING:



12P10 = Device code
 Solid dot1 = Pin1 indicator
 Solid dot2 = Green device, if none, normal device
 XX = Date Code



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ¹	I_D	-34	A
Pulsed Drain Current ¹	I_{DM}	-102	A
Power Dissipation ²	P_D	3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	42	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

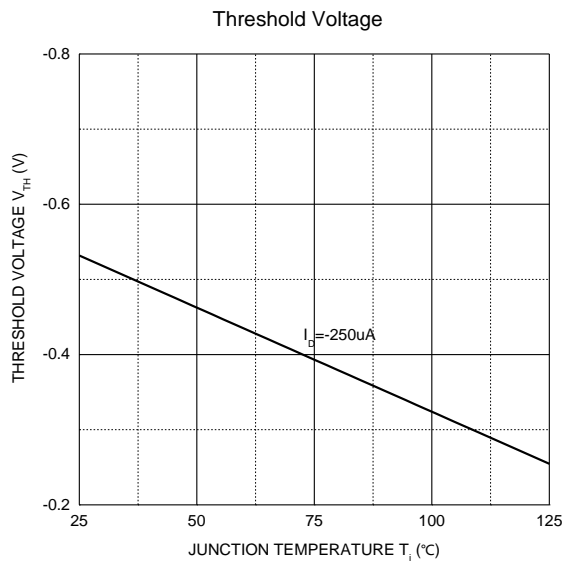
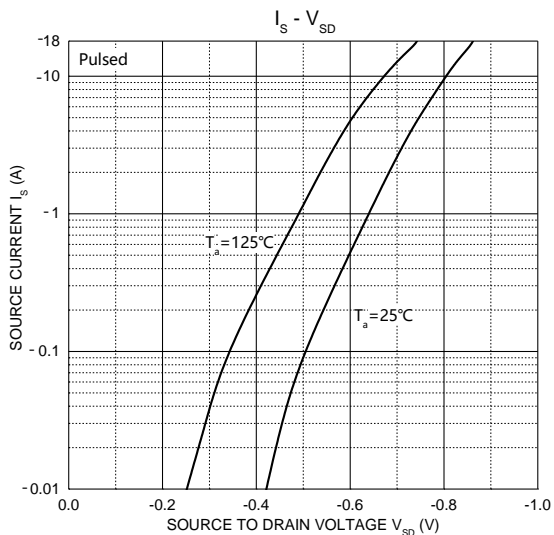
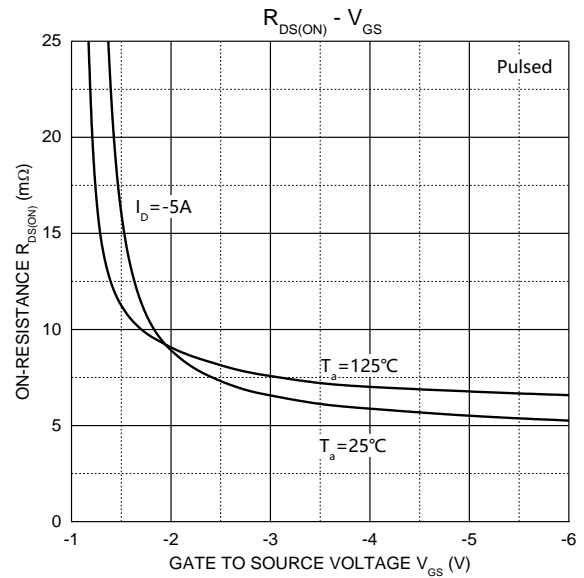
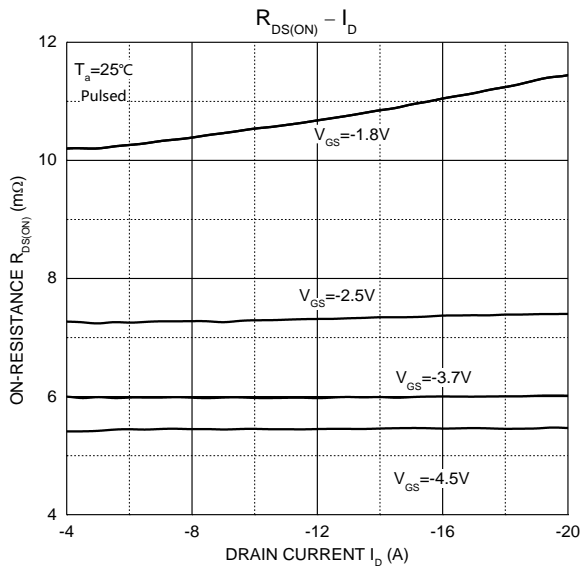
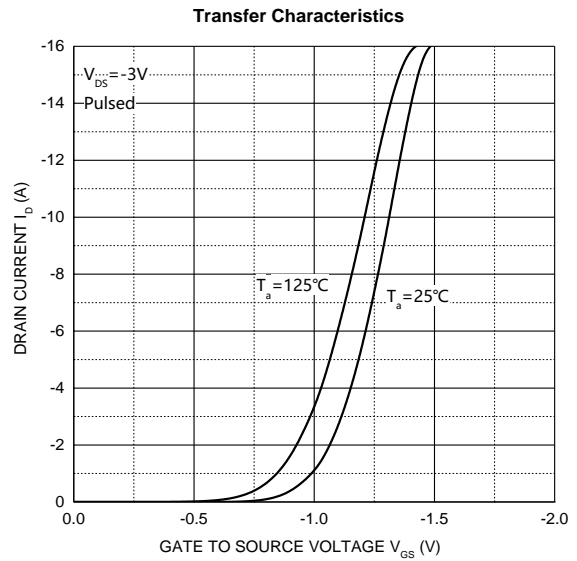
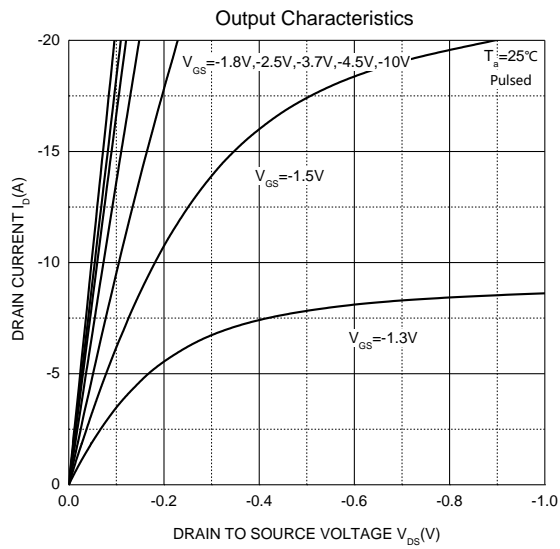
MOSFET ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-12			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -12V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage ³	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.35	-0.5	-1	V
Drain-source on-resistance ³	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -10A$		5.7	7.5	m Ω
		$V_{GS} = -3.7V, I_D = -10A$		6.0	7.8	
		$V_{GS} = -2.5V, I_D = -8A$		7.0	9.1	
		$V_{GS} = -1.8V, I_D = -6A$		10	15	
Forward tranconductance ³	g_{FS}	$V_{DS} = -6V, I_D = -10A$	5			S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -6V, V_{GS} = 0V, f = 1MHz$		4850		pF
Output Capacitance	C_{oss}			1520		
Reverse Transfer Capacitance	C_{rss}			1610		
Gate resistance	R_g	$f = 1MHz$			30	Ω
Total Gate Charge	Q_g	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -5A$		65		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			325		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -6V, V_{GEN} = -4.5V, I_D = -4A$ $R_L = 6\Omega, R_{GEN} = 1\Omega$		22		ns
Turn-on rise time	t_r			50		
Turn-off delay time	$t_{d(off)}$			100		
Turn-off fall time	t_f			30		
Source-Drain Diode characteristics						
Diode forward current ⁴	I_S	$T_C = 25^\circ\text{C}$			-34	A
Diode pulsed forward curren ⁴	I_{SM}				-102	A
Diode Forward voltage ³	V_{DS}	$V_{GS} = 0V, I_S = -10A$			-1.2	V

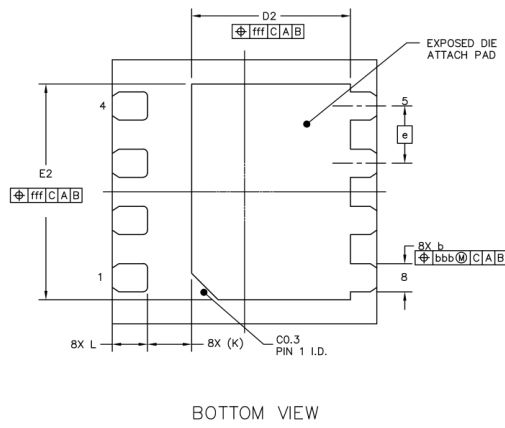
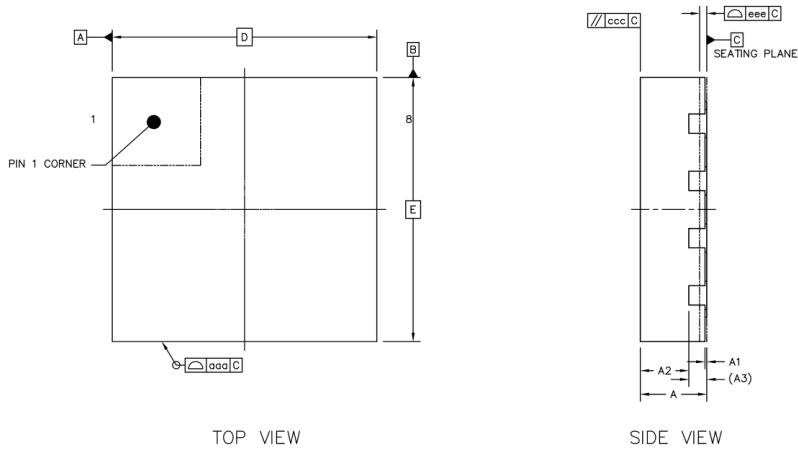
Notes:

1. Device mounted on FR-4 substrate board, with minimum recommended pad layout, single side.
2. The power dissipation is limited by 150°C junction temperature
3. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. The data is theoretically the same as I_D , in real applications , should be limited by total power dissipation.

Typical Electrical and Thermal Characteristics



DFN3x 3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.550TYP		0.022TYP	
A3	0.203REF		0.008REF	
b	0.270	0.370	0.011	0.015
D	3.000BSC		0.118BSC	
E	3.000BSC		0.118BSC	
e	0.650BSC		0.026BSC	
D2	1.700	1.900	0.067	0.075
E2	2.350	2.550	0.093	0.100
L	0.300	0.500	0.012	0.020
K	0.500REF		0.020REF	
aaa	0.100TYP		0.004TYP	
ccc	0.100TYP		0.004TYP	
eee	0.080TYP		0.003TYP	
bbb	0.100TYP		0.004TYP	
fff	0.100TYP		0.004TYP	