Descriptions

This -30V,-22A P-Channel MOSFET in a DFN 3×3-8L Plastic Package.

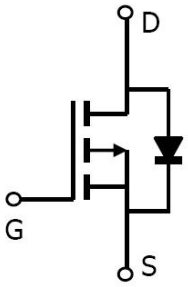
Features

- V_{DS} (V) = -30V
- I_D =-22 A (V_{GS} = -20V)
- Halogen-Free Product

Applications

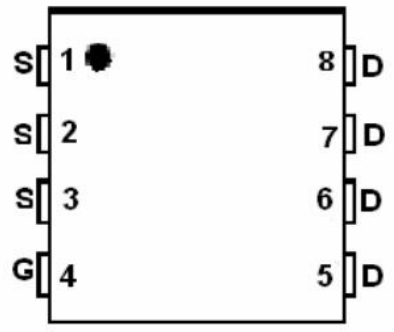
Power Management in Notebook computer, Portable Equipment and Battery powered systems

Equivalent Circuit

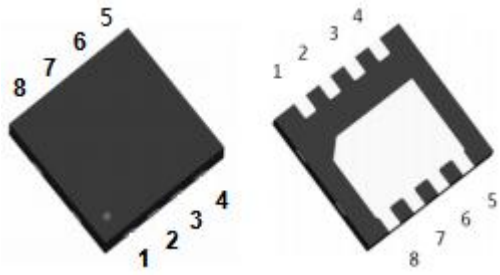


Schematic diagram

Pinning



Pin assignment



DFN3X3-8L

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D (T_a=25°C)	-22	A
Continuous Drain Current	I_D (T_a=70°C)	-18	A
Pulsed Drain Current	I_{DM}	-64	A
Avalanche energy L=0.5mH	E_{AS}	270	mJ
Power Dissipation for Single Operation	P_D (T_a=25℃)	22.7	W
Power Dissipation for Single Operation	P_D (T_a=100℃)	10	W
Maximum Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$ (t≦10s)	30	℃/W
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	60	℃/W
Maximum Junction-to-Case	$R_{\theta JC}$	5.5	℃/W

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V V_{GS}=0V			-1.0	μA
		V_{DS}=-30V V_{GS}=0V T_J=55°C			-5.0	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS I_D=-250μA	-1.0	-1.7	-3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V I_D=-10A		17.6	20	mΩ
		V_{GS}=-4.5V I_D=-10A		26.4	30	
Forward Transconductance	g_{FS}	V_{DS}=-5V I_D=-10A		17		S
Diode Forward Voltage	V_{SD}	I_S=-1A V_{GS}=0V		-0.72	-1.0	V
Maximum Body-Diode Continuous Current	I_S				-22	A
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=-10V V_{DS}=-15V I_D=-12A		21	34	nC
Total Gate Charge	$Q_{g(4.5V)}$			11	18	
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			3		
Gate Resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		2.0	5.0	Ω
Input Capacitance	C_{iss}	V_{GS}=0V V_{DS}=-15V f=1MHz		1650		pF
Output Capacitance	C_{oss}			330		
Reverse Transfer Capacitance	C_{rss}			220		
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-10V V_{DS}=-15V R_L=1.3Ω R_{GEN}=3Ω		10.5		ns
Turn-on Rise Time	t_r			8.5		
Turn-off Delay Time	$t_{d(OFF)}$			30		
Turn-off Fall Time	t_f			11.5		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-12A dI/dt=500A/μs		10		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-12A dI/dt=500A/μs		15		nC

Electrical Characteristic Curve

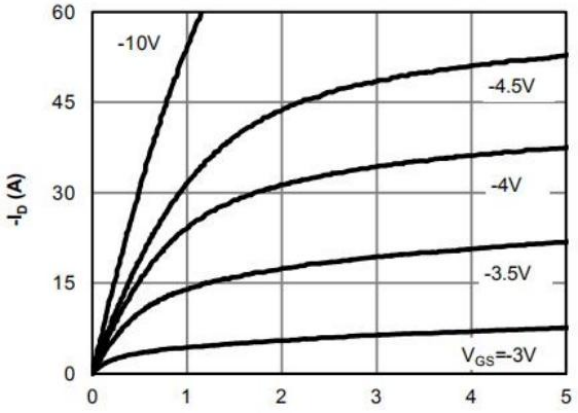


Figure 1: On-Region Characteristics

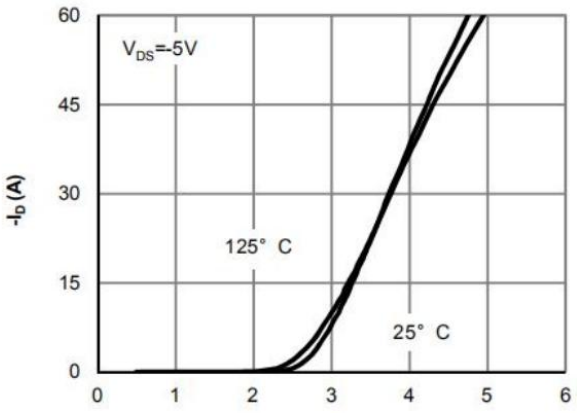


Figure 2: Transfer Characteristics

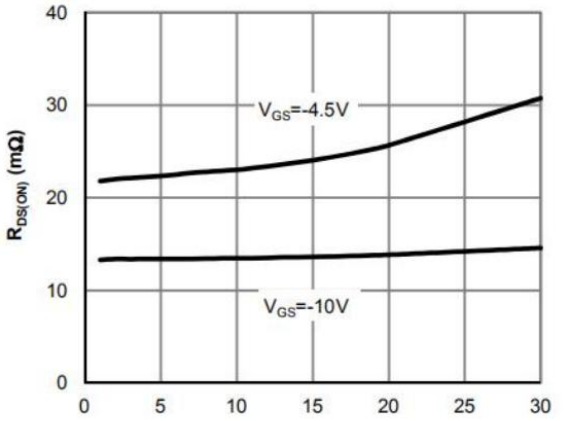


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

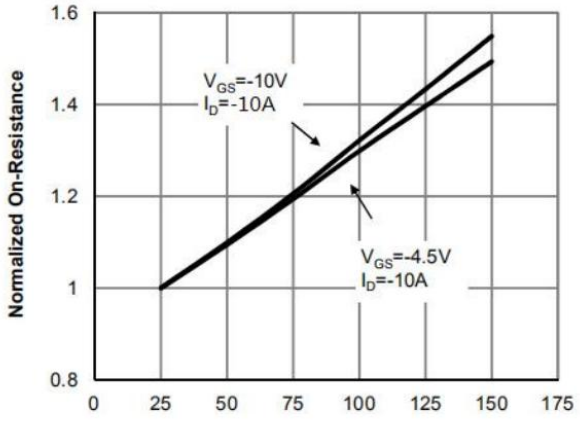


Figure 4: On-Resistance vs. Junction Temperature

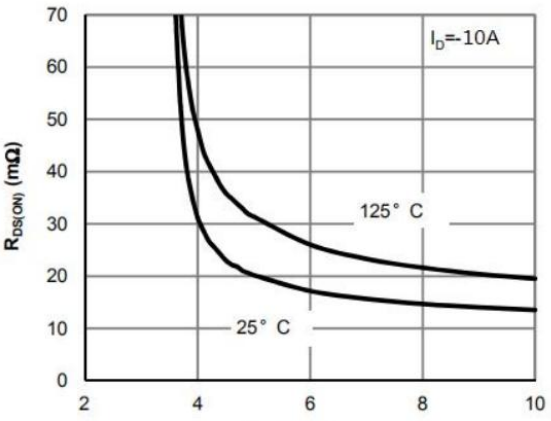


Figure 5: On-Resistance vs. Gate-Source Voltage

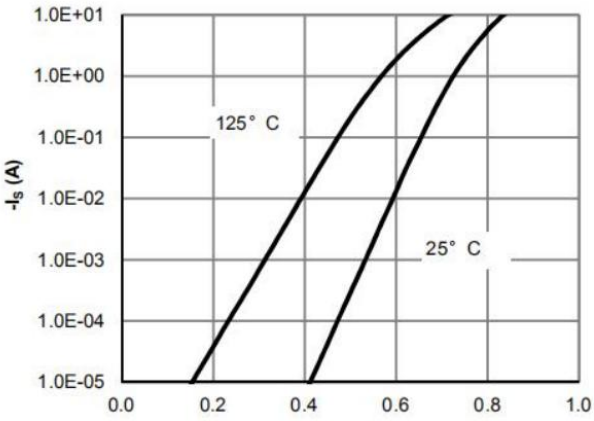


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

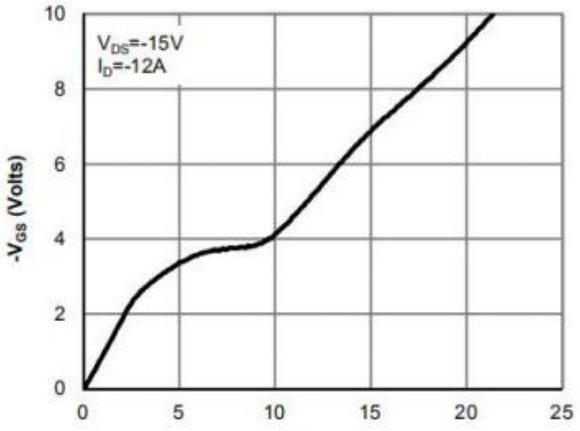


Figure 7: Gate-Charge Characteristics

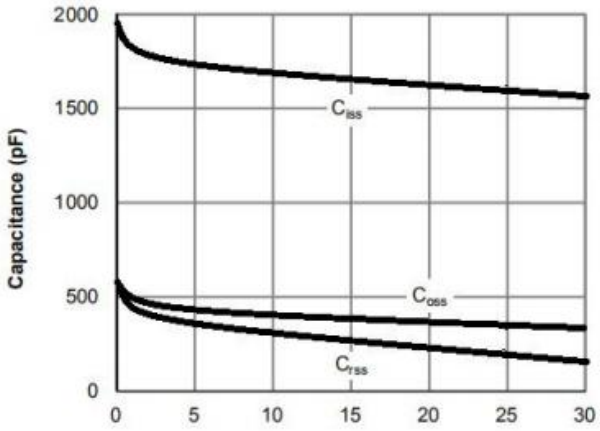
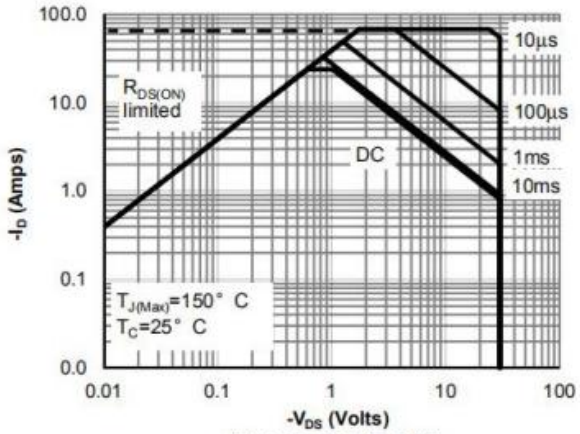


Figure 8: Capacitance Characteristics



$-V_{GS}$> or equal to -4.5V

Figure 9: Maximum Forward Biased Safe Operating Area

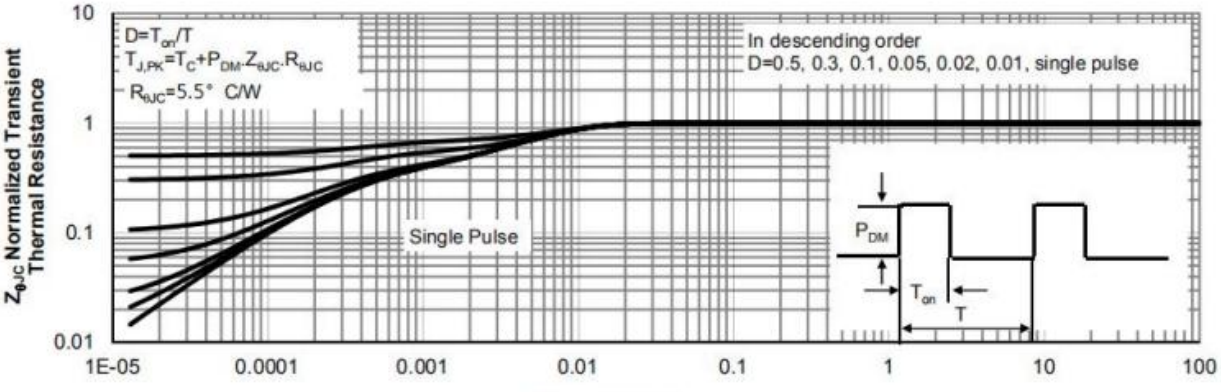


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions

Note:

COT:	Company Logo
140P03:	Product Type.
****:	Lot No. Code, code change with Lot No.

Packaging SPEC

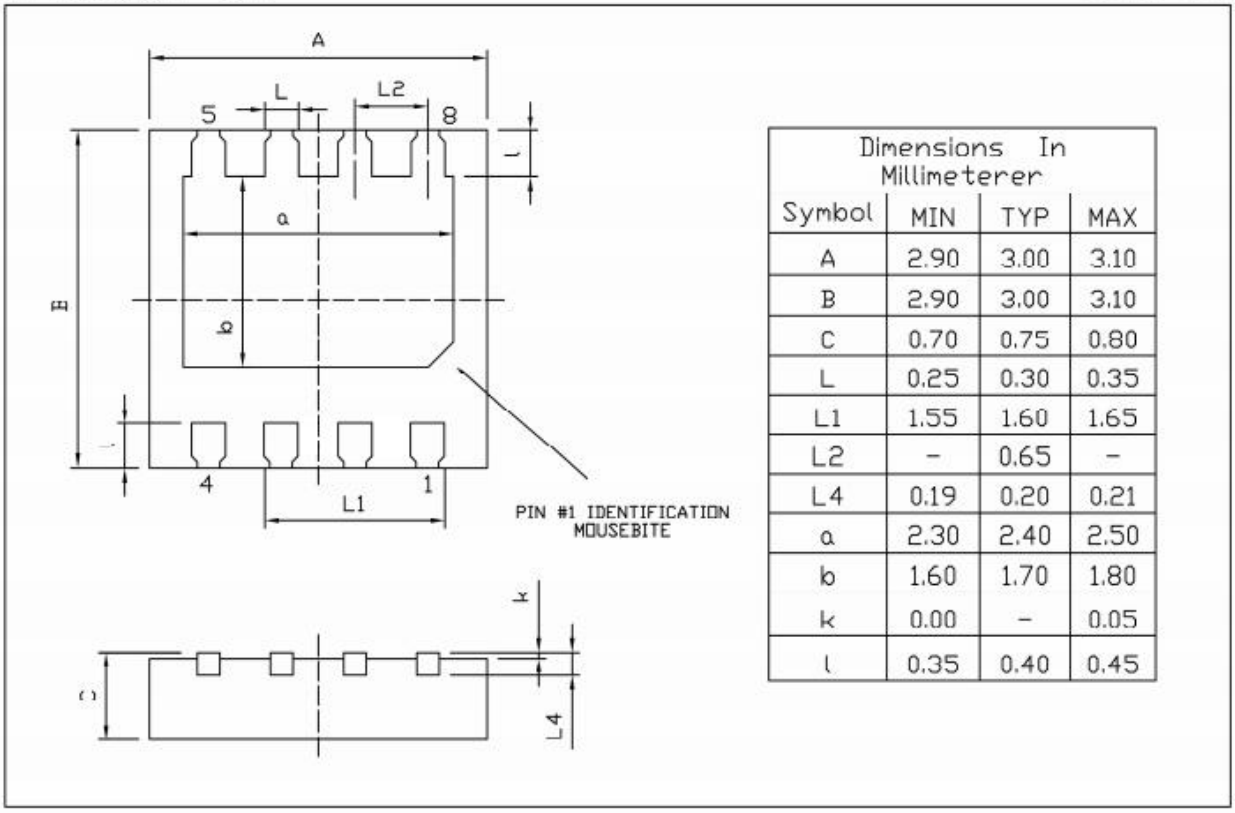
REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
DFN3×3-8L	5,000	2	10,000	6	60,000	13″ ×12	360×360×50	380×335×366

Package Outline Dimensions

DFN3X3A-8L

Unit:mm



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	2.90	3.00	3.10
B	2.90	3.00	3.10
C	0.70	0.75	0.80
L	0.25	0.30	0.35
L1	1.55	1.60	1.65
L2	-	0.65	-
L4	0.19	0.20	0.21
a	2.30	2.40	2.50
b	1.60	1.70	1.80
k	0.00	-	0.05
l	0.35	0.40	0.45