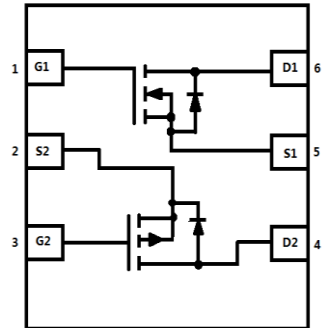
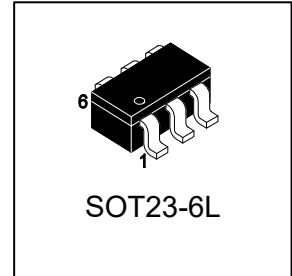


# NP3707

## 30 V Complementary Trench MOSFET

### 1. FEATURES

- P-Channel: VDS = -30V  
RDS(ON) ≤ 90mΩ, VGS@-10V, IDS@-2.5A  
RDS(ON) ≤ 160mΩ, VGS@-4.5V, IDS@-1.0A
- N-Channel: VDS = 30V  
RDS(ON) ≤ 50mΩ, VGS@10V, IDS@1A  
RDS(ON) ≤ 60mΩ, VGS@4.5V, IDS@1A
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



### 2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
NP3707	7T	3000/Tape&Reel

### 3. Absolute Maximum Ratings (TA =25 °C unless otherwise noted)

Parameter (P-Channel)		Symbol	Limits	Unit
Drain-Source Voltage		VDS	-30	V
Gate-Source Voltage		VGS	±20	V
Drain Current-Continuous		ID	2.5	A
Drain Current-Pulsed (Note1)		IDM	10	A
Maximum Power Dissipation	TA = 25°C	PD	0.89	W
	TA = 75°C		0.54	
Operating Junction and Storage Temperature Range		TJ ,TSTG	-55 ~ +150	°C
Junction-to-Ambient Thermal Resistance (Note2)		RθJA	140	°C/W

Parameter (N-Channel)		Symbol	Limits	Unit
Drain-Source Voltage		VDS	30	V
Gate-Source Voltage		VGS	±20	V
Drain Current-Continuous		ID	3.5	A
Drain Current-Pulsed (Note1)		IDM	14	A
Maximum Power Dissipation	TA = 25°C	PD	0.89	W
	TA = 75°C		0.54	
Operating Junction and Storage Temperature Range		TJ ,TSTG	-55 ~ +150	°C
Junction-to-Ambient Thermal Resistance (Note2)		RθJA	140	°C/W

- 1.Repetitive Rating: Pulse width limited by the maximum junction temperature
2. 1-in<sup>2</sup> 2oz Cu PCB board



**4. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**P-Channel**

Parameter	Symbol	Min.	Typ.	Max.	Unit	
<b>Static</b>						
Drain-Source Breakdown Voltage (VGS = 0V, ID = -250μA)	BVDSS	-30	-	-	V	
Drain-Source On-State Resistance (VGS = -10V, ID = -1.0A) (VGS = -4.5V, ID = -1.0A)	RDS(on)	-	70 125	90 160	mΩ	
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-1		-3	V	
Zero Gate Voltage Drain Current (VDS = -24V, VGS = 0V)	IDSS	-	-	-1	μA	
Gate Body Leakage (VGS = ±20V, VDS = 0V)	IGSS	-	-	±100	nA	
<b>Source-Drain Diode</b>						
Diode Forward Voltage (IS = -1.0A, VGS = 0V)	VSD	-	-	-1.5	V	
<b>Dynamic Characteristics</b>						
Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -10 V)	Ciss	-	480	-	pF	
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -10 V)	Coss	-	55	-	pF	
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -10 V)	Crss	-	50	-	pF	
<b>Switching Characteristics</b>						
Turn-On Delay Time	(VDS = -10V, RL = 3.6Ω VGS = -10V, RG = 6Ω )	td(on)	-	26	-	ns
Rise Time		tr	-	62	-	
Turn-Off Delay Time		td(off)	-	122	-	
Fall Time		tf	-	68	-	
Total Gate Charge (VGS = -4.5V, VDS = -10V, ID = -2A)	Qg	-	3.5	-	nC	
Gate-to-Source Gate Charge (VGS = -4.5V, VDS = -10V, ID = -2A)	Qgs	-	1.3	-	nC	
Gate-to-Drain Charge (VGS = -4.5V, VDS = -10V, ID = -2A)	Qgd	-	0.9	-	nC	
Gate-Resistance (VDS = 0V, VGS = 0V, f = 1MHz)	Rg	-	100	-	Ω	



**4. ELECTRICAL CHARACTERISTICS (Ta= 25°C)(Con.)**
**N-Channel**

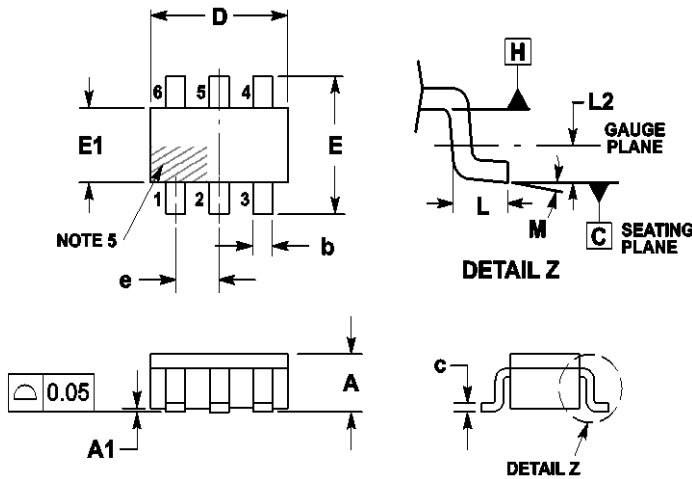
Parameter	Symbol	Min.	Typ.	Max.	Unit	
<b>Static</b>						
Drain-Source Breakdown Voltage (VGS = 0V ID = 250μA)	BVDSS	30	-	-	V	
Drain-Source On-State Resistance (VGS=10V, ID=4.0A) (VGS=4.5V, ID=2.0A)	RDS(on)	- -	35 45	50 60	mΩ	
Gate Threshold Voltage (VDS = VGS, ID = 250uA)	VGS(th)	1		3	V	
Zero Gate Voltage Drain Current (VDS = 30V, VGS = 0V)	IDSS	-	-	1.0	uA	
Gate Body Leakage (VGS = ±20V, VDS = 0V)	IGSS	-	-	±10	uA	
<b>Source-Drain Diode</b>						
Diode Forward Voltage (IS = 1.0A, VGS = 0V)	VSD	-	-	1.5	V	
<b>Dynamic Characteristics</b>						
Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Ciss	-	450	-	pF	
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Coss	-	54	-	pF	
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Crss	-	48	-	pF	
<b>Switching Characteristics</b>						
Turn-On Delay Time	(VDD = 15V, RL = 2.7Ω ID = 1A, VGEN = 10V, RG = 3Ω )	td(on)	-	2	-	ns
Rise Time		tr	-	4	-	
Turn-Off Delay Time		td(off)	-	16	-	
Fall Time		tf	-	4	-	
Total Gate Charge (VGS = -4.5V, VDS = -15V, ID = 3A)	Qg	-	4.5	-	nC	
Gate-to-Source Gate Charge (VGS = -4.5V, VDS = -15V, ID = 3A)	Qgs	-	1.4	-	nC	
Gate-to-Drain Charge (VGS = -4.5V, VDS = -15V, ID = 3A)	Qgd	-	1.8	-	nC	
Gate-Resistance (VDS=0V, VGS=0V, f=1MHz)	Rg	-	56	-	Ω	



### 5. OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	1.00	1.10	0.035	0.039	0.043
A1	0.01	0.06	0.10	0.0004	0.002	0.004
b	0.25	0.38	0.50	0.010	0.015	0.020
c	0.10	0.18	0.26	0.004	0.007	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
E	2.50	2.75	3.00	0.098	0.108	0.118
E1	1.30	1.50	1.70	0.051	0.059	0.067
e	0.85	0.95	1.05	0.033	0.037	0.041
L	0.20	0.40	0.60	0.008	0.016	0.024
L2	0.25REF			0.010REF		
M	0°	---	10°	0°	---	10°

### 6. SOLDERING FOOTPRINT

