

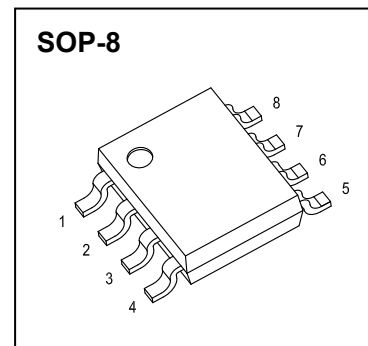


DONGGUAN NANJING ELECTRONICS LTD.,

SOP8 Plastic-Encapsulate MOSFETS

NJ4409 P-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	I_D
-30V	8mΩ@-10V	-14A
	10mΩ@-4.5V	

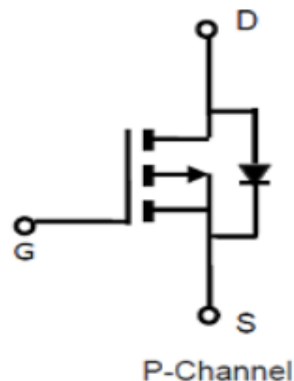


FEATURE

- Surface Mount Package
- Super High Density Cell Design for Extremely Low $R_{DS(on)}$

APPLICATIONS

- ◆ High Frequency Power Load Synchronous
- ◆ Newworking DDC Power System
- ◆ Load Switch



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current ($T_A = 25^\circ\text{C}$)	$V_{GS} = 10\text{V}$	-14	A
I_{DM}	Pulsed Drain Current		-70	A
I_S	Continuous Source Current (Diode Conduction)		-2.7	A
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	3.0	W
		$T_A = 70^\circ\text{C}$	2.1	
T_J	Operation Junction Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55~+150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient		85	$^\circ\text{C/W}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress rating only and functional device operation is not implied

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-1.3	-2.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0			-1	uA
		V _{DS} =-24V, V _{GS} =0 T _J =55℃			-5	
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =-10V, I _D =-15A		8	11	mΩ
		V _{GS} =-4.5V, I _D =-10A		10	13	
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =-1.0A, V _{GS} =0V		-0.71	-1.0	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =-15V V _{GS} =-4.5V I _D =-15A		37.08	48.2	nC
Q _{gs}	Gate-Source Charge			10.12	13.16	
Q _{gd}	Gate-Drain Charge			11.24	14.61	
C _{iss}	Input Capacitance	V _{DS} =-15V V _{GS} =0V f=1MHz		3887		pF
C _{oss}	Output Capacitance			577		
C _{rss}	Reverse Transfer Capacitance			425		
T _{d(on)}	Turn-On Time	V _{DS} =-15V I _D =-10A		19.52	39.04	nS
T _r				10.12	20.34	
T _{d(off)}	Turn-Off Time	V _{GEN} =-10V R _G =6Ω		137.6	275.2	
T _f				55.32	110.64	

Note: 1. Pulse test: pulse width $\leq 300\mu\text{S}$, duty cycle $\leq 2\%$

2.Static parameters are based on package level with recommended wire bonding

Typical Characteristics

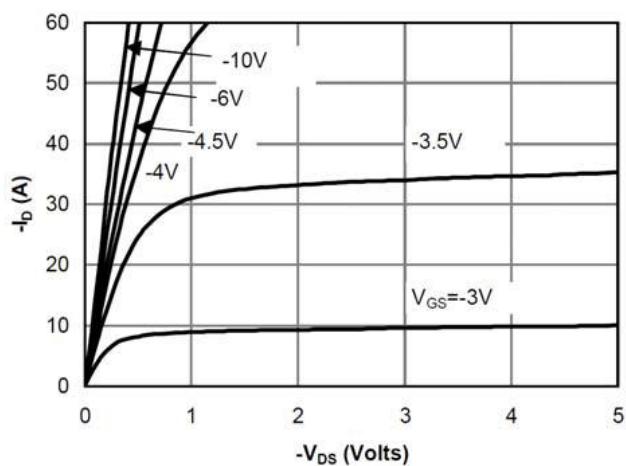


Fig 1: On-Region Characteristics

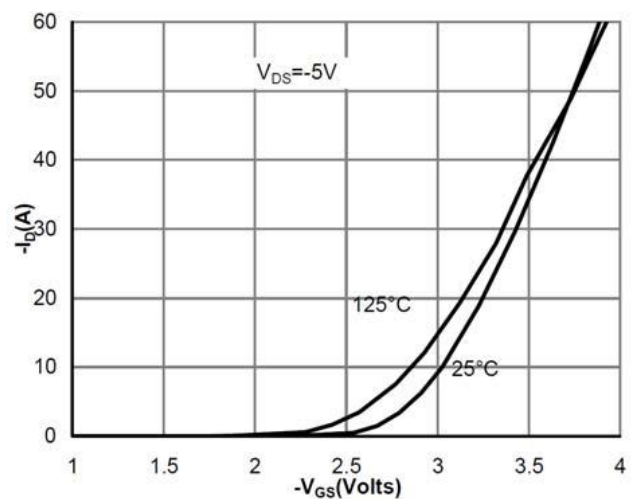


Figure 2: Transfer Characteristics

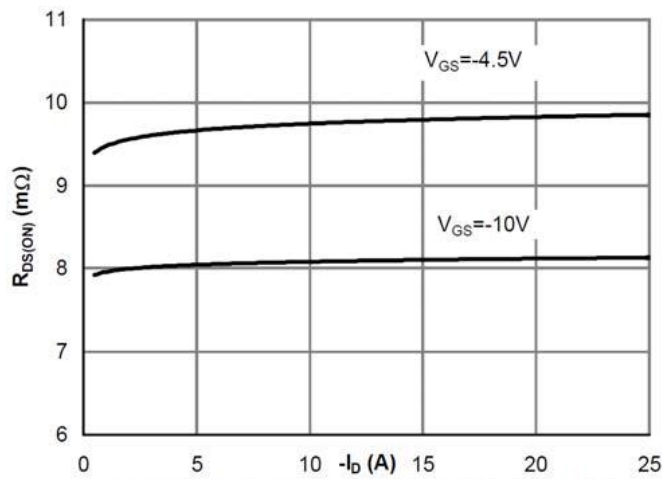


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

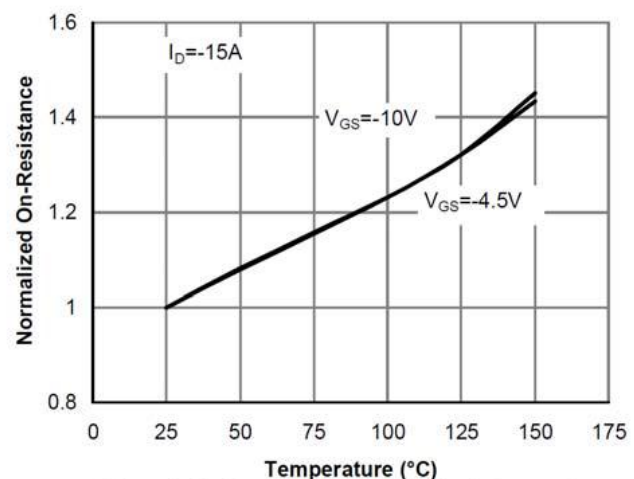


Figure 4: On-Resistance vs. Junction Temperature

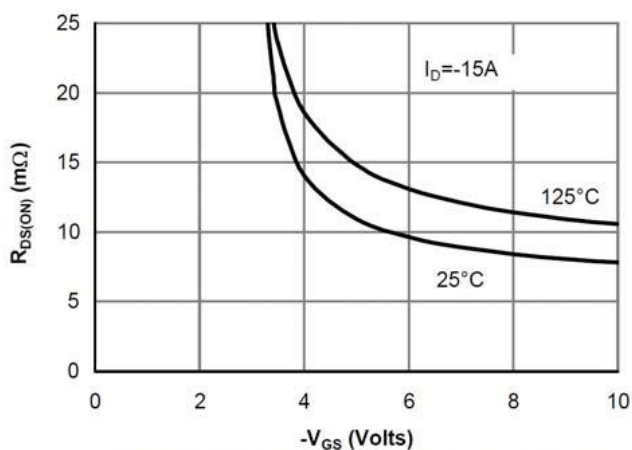


Figure 5: On-Resistance vs. Gate-Source Voltage

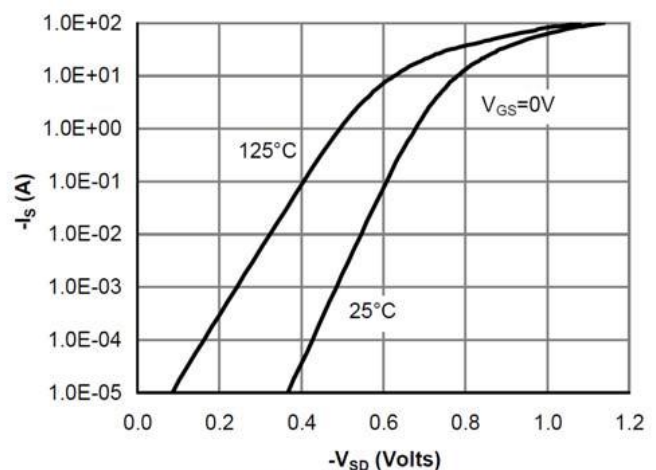


Figure 6: Body-Diode Characteristics

Typical Characteristics

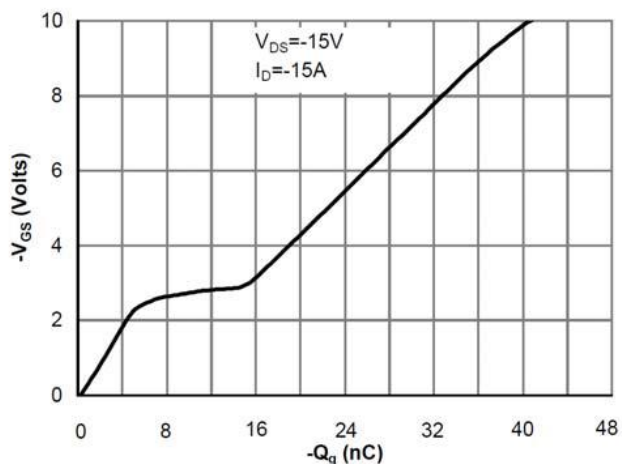


Figure 7: Gate-Charge Characteristics

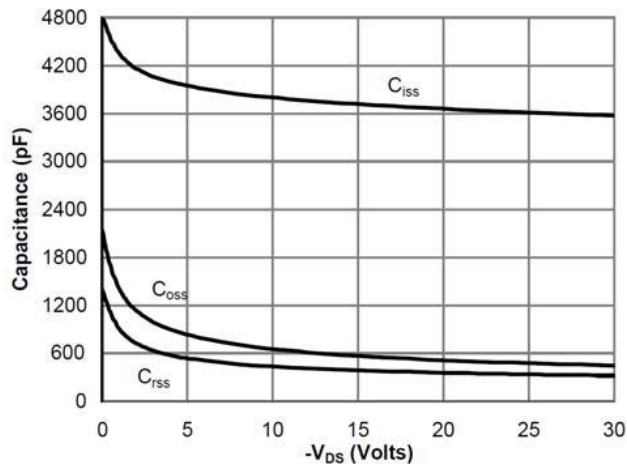


Figure 8: Capacitance Characteristics

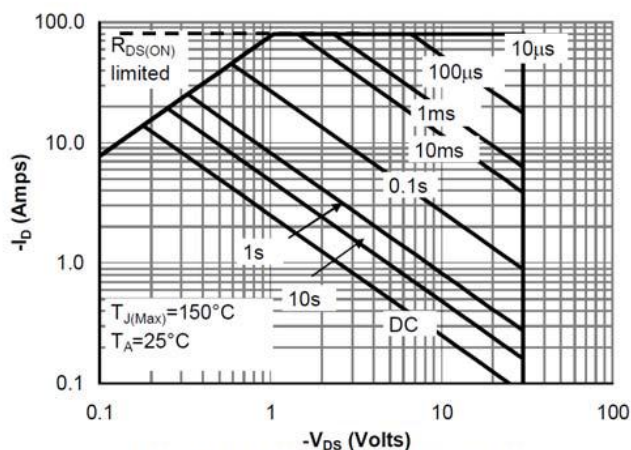


Figure 9: Maximum Forward Biased Safe Operating Area

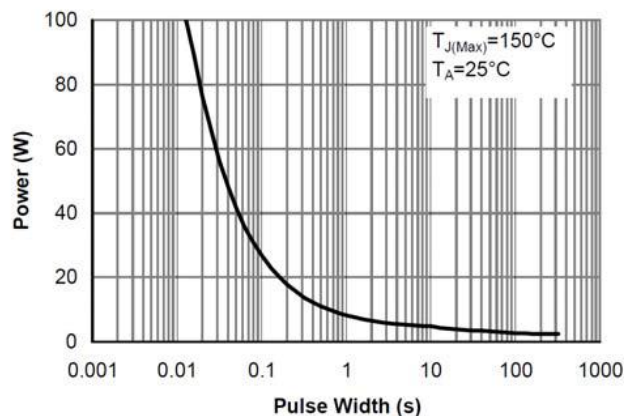


Figure 10: Single Pulse Power Rating Junction-to-Ambient

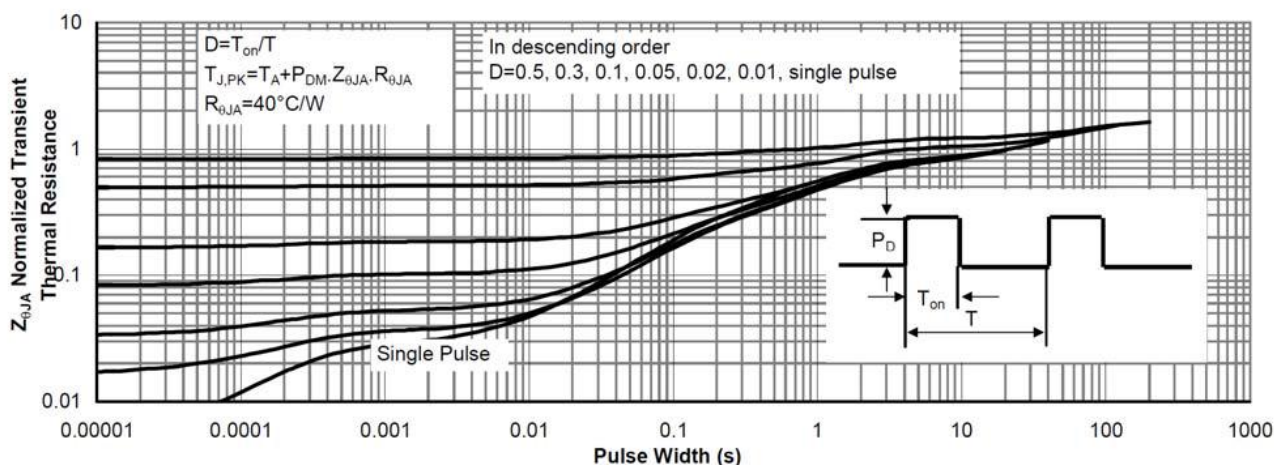
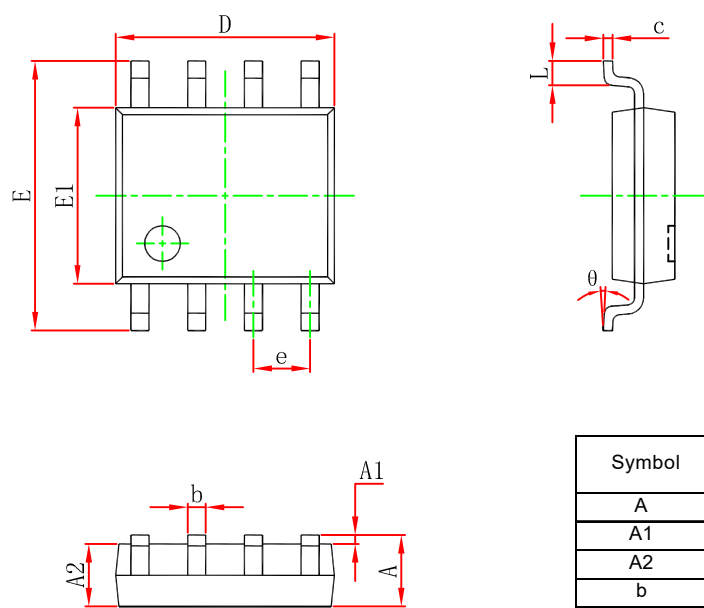


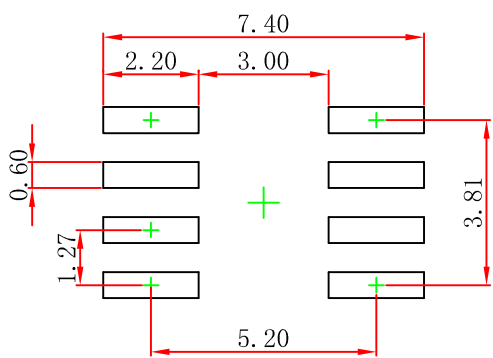
Figure 11: Normalized Maximum Transient Thermal Impedance

SOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

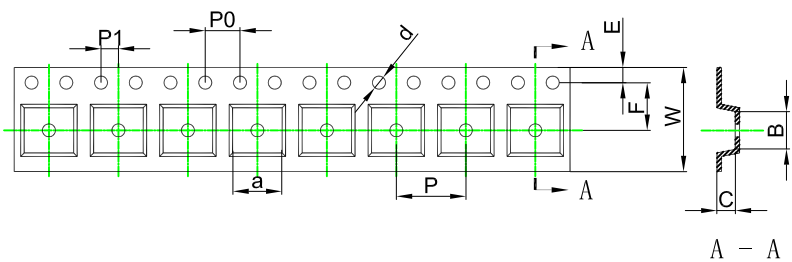
SOP8 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

SOP8 Tape and Reel

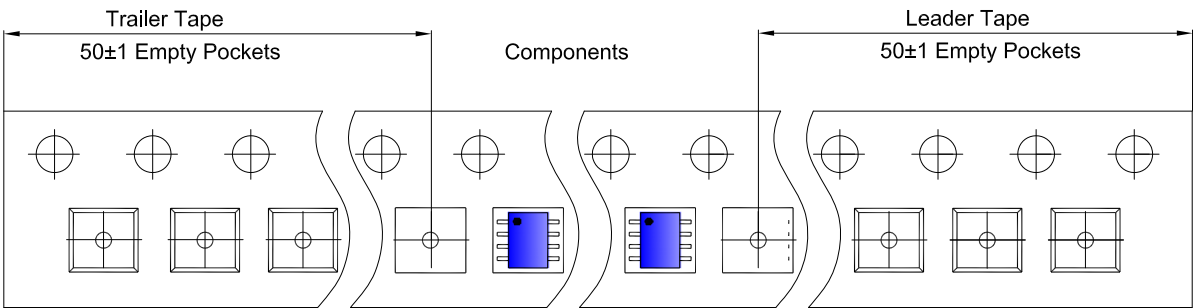
SOP8 Embossed Carrier Tape



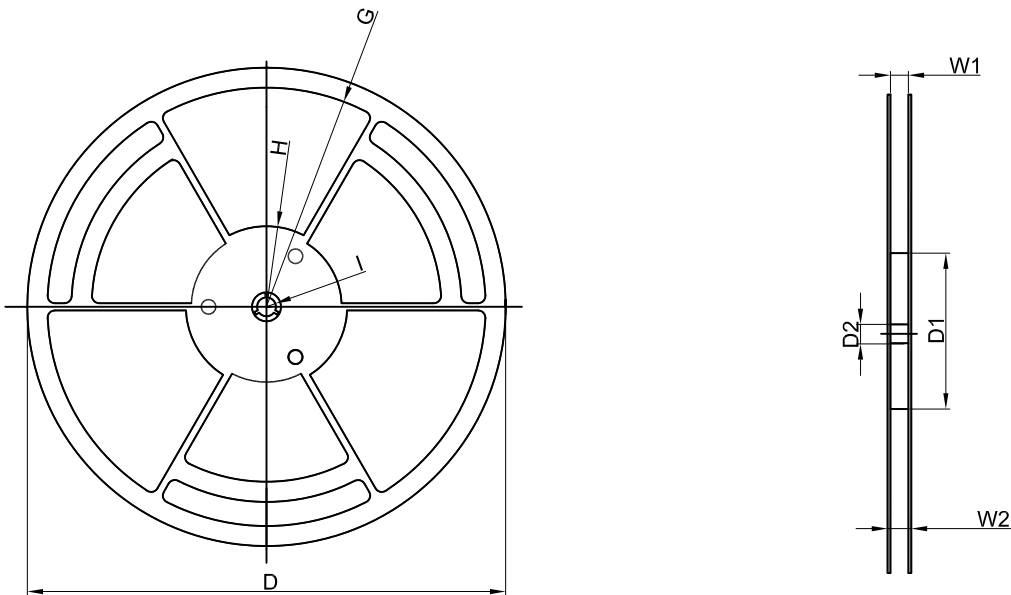
Packaging Description:
SOP8 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).
ALL DIM IN mm

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP8 Tape Leader and Trailer



SOP8 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
4,000 pcs	13 inch	8,000 pcs	360×360×65	64,000 pcs	565×380×390	