

### Product Summary

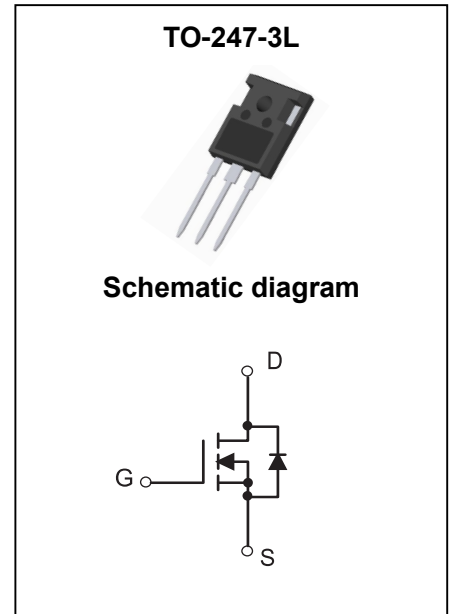
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
900V	1.2Ω@10V	9A

### Feature

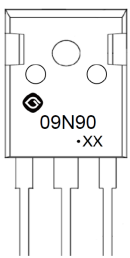
- Planar Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested
- 100%  $\Delta V_{DS}$  Tested

### Application

- Power Switching Application



### MARKING:



09N90 = Device Code  
 XX = Date Code  
 Solid Dot = Green Indicator

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

Parameter	Symbol	Value	Unit
Drain - Source Voltage	$V_{DS}$	900	V
Gate - Source Voltage	$V_{GS}$	$\pm 30$	V
Continuous Drain Current <sup>1</sup>	$I_D$	9	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	36	A
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	5.2	A
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	162	mJ
Power Dissipation <sup>5</sup>	$P_D$	160	W
Thermal Resistance from Junction to Ambient <sup>6</sup>	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.78	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

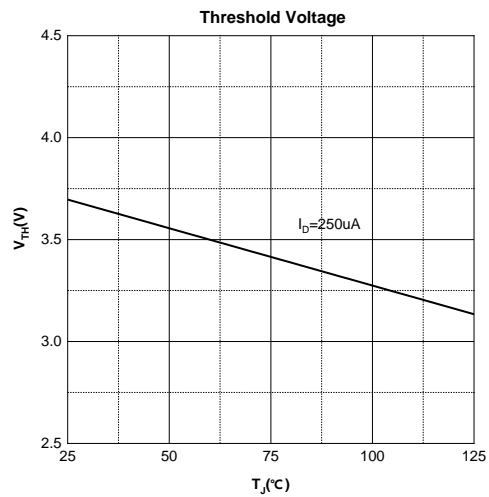
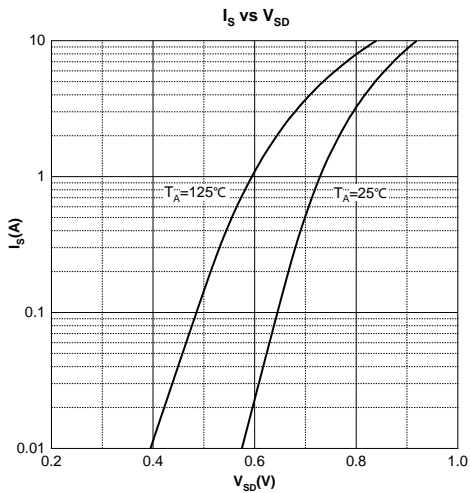
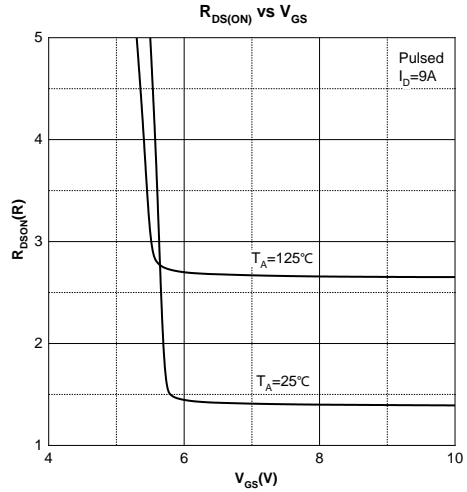
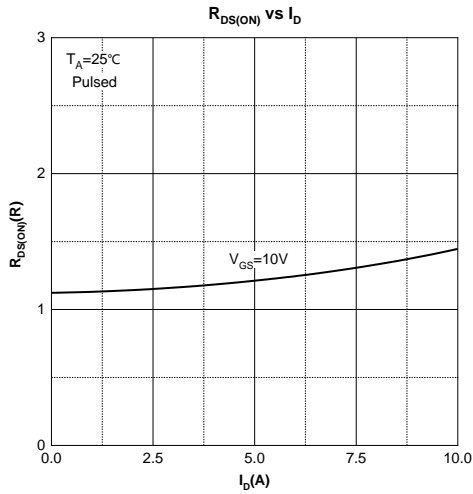
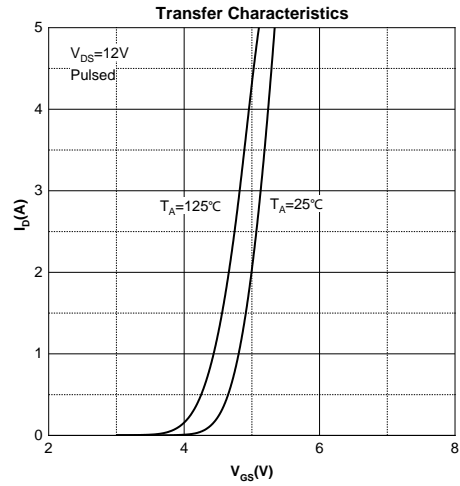
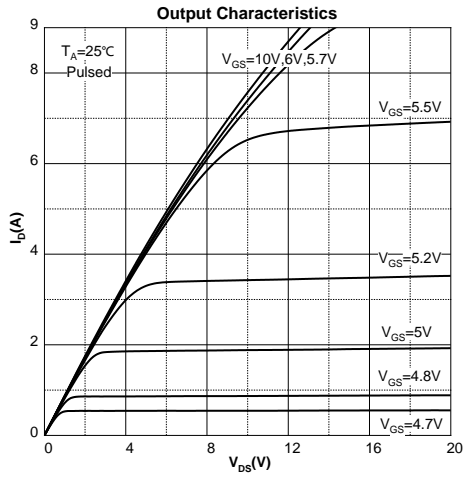
**MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$  unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	900			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 900V, V_{GS} = 0V$			1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 30V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	3	3.7	5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 4.5A$		1.2	1.6	$\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 450V, V_{GS} = 0V, f = 1MHz$		1985		pF
Output Capacitance	$C_{oss}$			40		
Reverse Transfer Capacitance	$C_{rss}$			5		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.1		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 450V, V_{GS} = 10V, I_D = 4.5A$		37		nC
Gate-source Charge	$Q_{gs}$			10		
Gate-drain Charge	$Q_{gd}$			11		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 0.5A,$ $R_G = 25\Omega$		70		ns
Turn-on Rise Time	$t_r$			120		
Turn-off Delay Time	$t_{d(off)}$			280		
Turn-off Fall Time	$t_f$			133		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 9A$			1.2	V

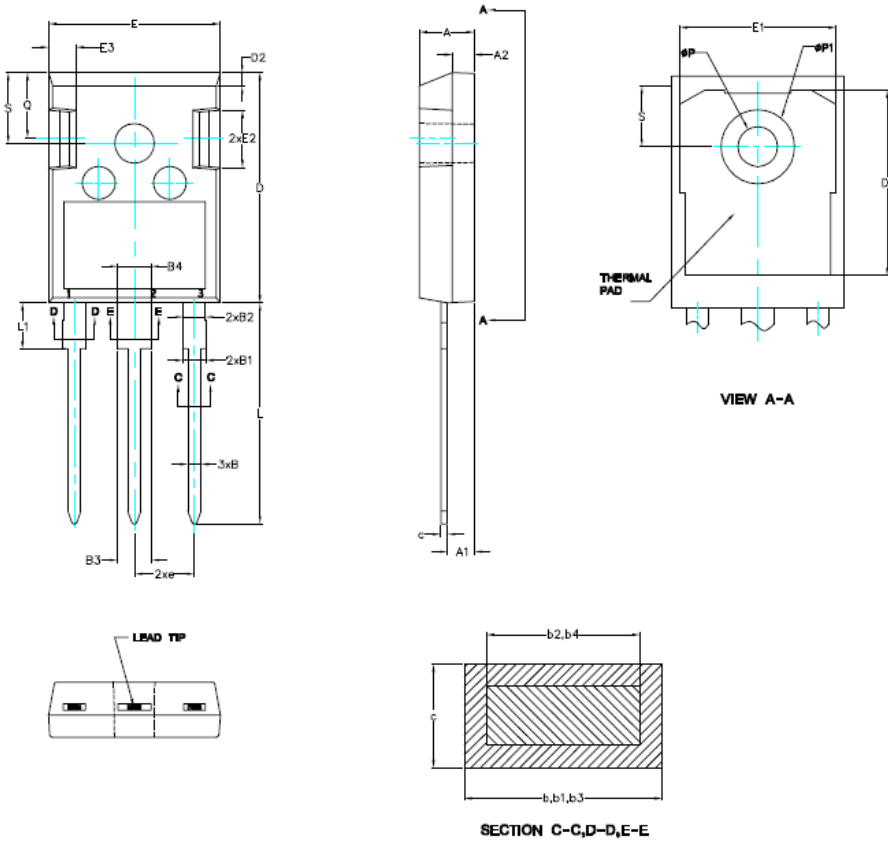
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = 50V, V_{GS} = 10V, L = 12mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 5.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ\text{C}$ .And device mounted on a large heatsink
- 6.Device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ .

**Typical Characteristics**



## TO-247-3L Package Information



SYMBOLS	DIMENSIONS			
	mm		Inch	
	MIN.	MAX.	MIN.	MAX.
A	4.85	5.15	0.191	0.203
A1	2.25	2.55	0.088	0.100
A2	1.85	2.15	0.073	0.085
B	1.04	1.33	0.041	0.052
B1	1.90	2.35	0.075	0.093
B2	1.90	2.15	0.075	0.085
B3	2.90	3.35	0.114	0.132
B4	2.90	3.15	0.114	0.124
c	0.55	0.68	0.022	0.027
D	20.8	21.10	0.819	0.831
D1	16.25	17.65	0.640	0.695
D2	0.95	1.35	0.037	0.053
E	15.70	16.10	0.618	0.634
E1	13.50	14.20	0.531	0.559
E2	3.80	5.00	0.150	0.197
E3	1.00	2.6	0.039	0.102
e	5.46BSC		0.215BSC	
L	19.80	20.3	0.779	0.799
L1	4.00	4.50	0.157	0.177
$\phi P$	3.50	3.70	0.138	0.145
$\phi P1$	—	7.19	—	0.291
Q	5.40	6.00	0.212	0.236
S	6.2BSC		0.244BSC	