General Features

- V_{DS} = 60V, I_D = 9A

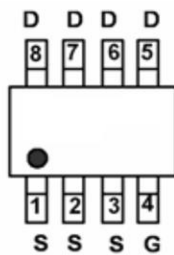 $R_{DS(ON)}$ < 18mΩ @ V_{GS}=10V   (Typ:12mΩ)

Application

- High power and current handing capability
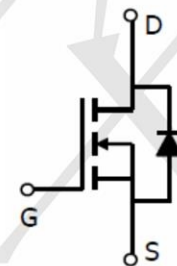- Lead free product is acquired
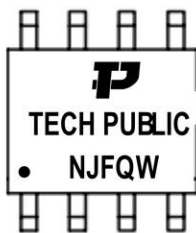- Surface mount package

Package and Pin Configuration

SOP-8 top view

```
 D   D   D   D
[8] [7] [6] [5]

[1] [2] [3] [4]
 S   S   S   G
```
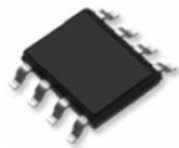
Circuit diagram

Marking

TECH PUBLIC
NJFQW

Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	9	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	6.4	A
Pulsed Drain Current	I_{DM}	36	A
Maximum Power Dissipation	P_D	2.6	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient [Note 2]	$R_{\theta JA}$	48	℃/W

Electrical Characteristics (TC=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60		-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics [Note 3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.2	1.8	2.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=9A	-	12	18	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=9A	25	-	-	S
Dynamic Characteristics [Note4]						
Input Capacitance	C_{Iss}	V_{DS}=30V,V_{GS}=0V, F=1.0MHz	-	2180	-	PF
Output Capacitance	C_{oss}		-	350	-	PF
Reverse Transfer Capacitance	C_{rss}		-	270	-	PF
Switching Characteristics [Note 4]						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V, R_L=1Ω V_{GS}=10V,R_{GEN}=3Ω	-	8.5	-	nS
Turn-on Rise Time	t_r		-	6	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	30	-	nS
Turn-Off Fall Time	t_f		-	5	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=8A, V_{GS}=10V	-	58	-	nC
Gate-Source Charge	Q_{gs}		-	8	-	nC
Gate-Drain Charge	Q_{gd}		-	17	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage [Note 3]	V_{SD}	V_{GS}=0V,I_S=9A	-	-	1.2	V
Diode Forward Current [Note 2]	I_S	-	-	-	9	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF=9A di/dt = 100A/μs [Note3]	-	30	-	nS
Reverse Recovery Charge	Qrr		-	44	-	nC

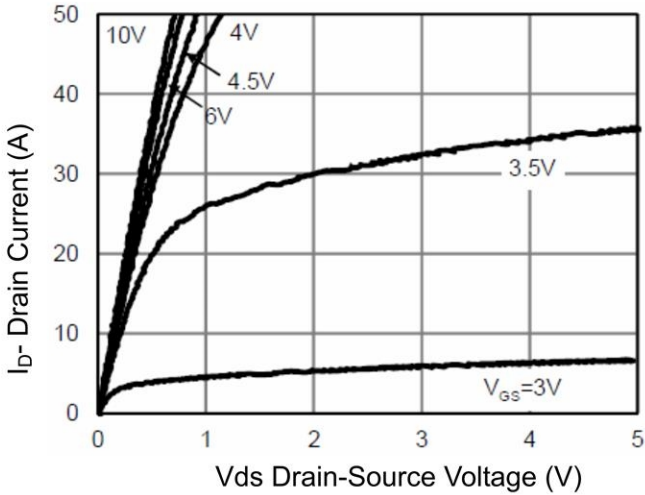## Typical Electrical and Thermal Characteristics

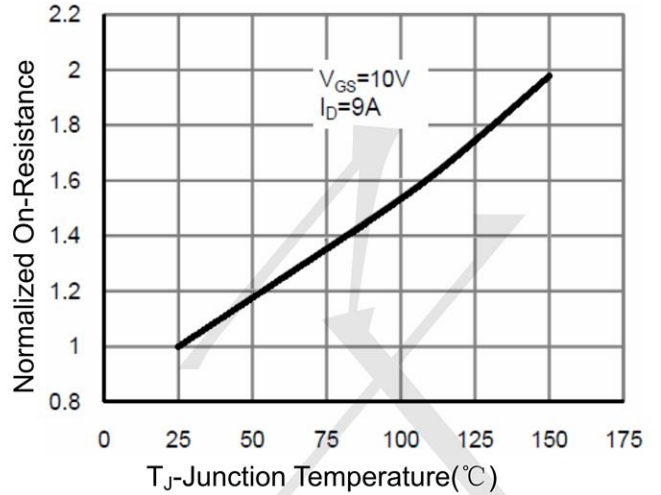
Figure 1 Output Characteristics

Figure 4 Rdson-JunctionTemperature
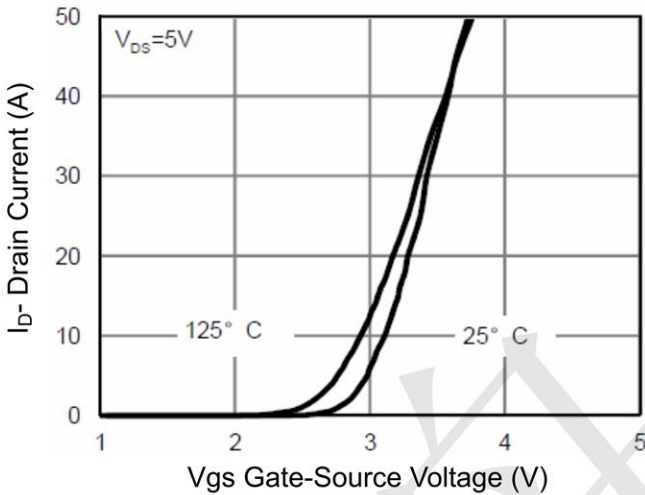

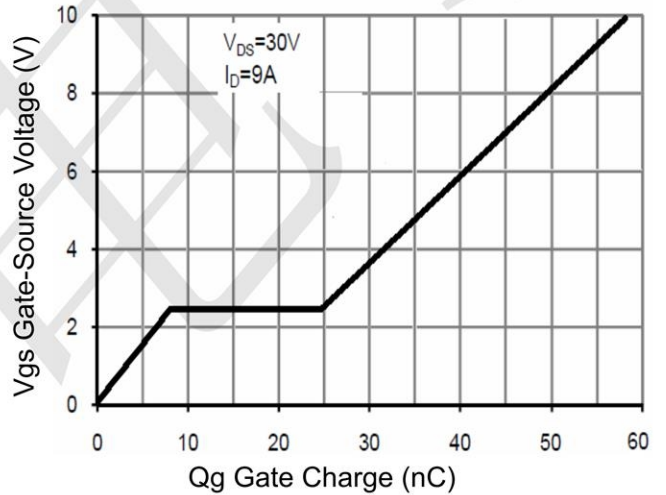**Figure 2 Transfer Characteristics**
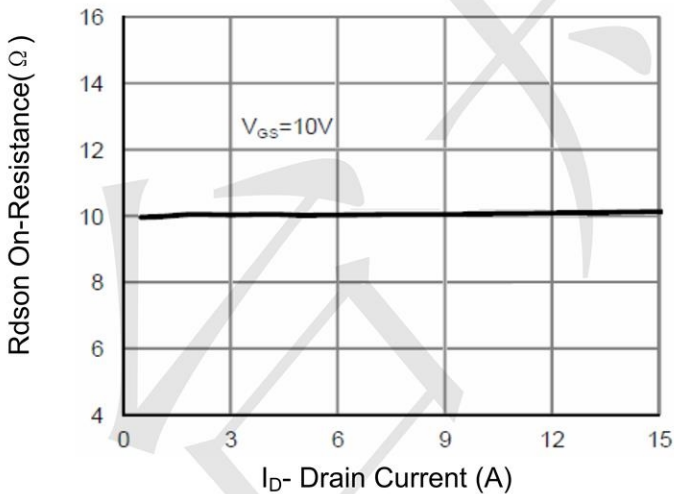

Figure 5 Gate Charge

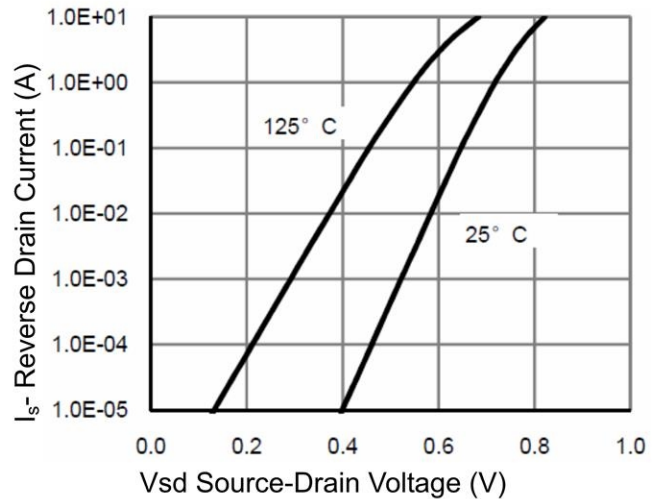
Figure 3 Rdson- Drain Current
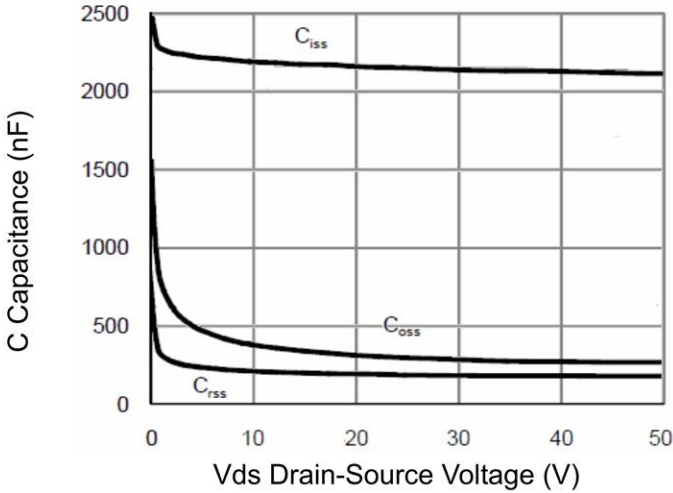

Figure 6 Source- Drain Diode Forward
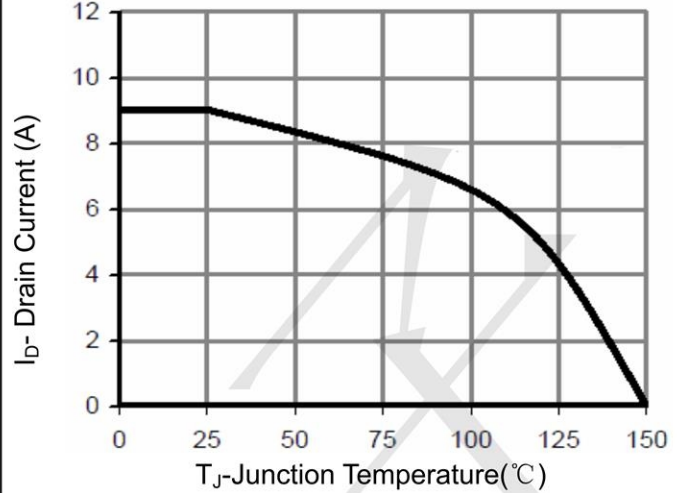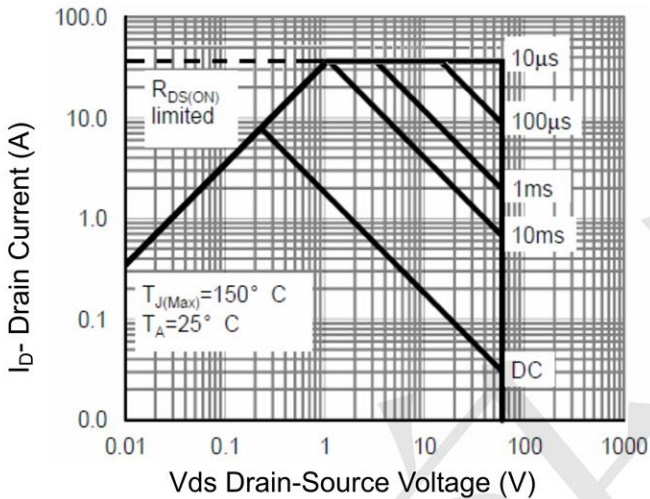
Figure 7 Capacitance vs Vds

Figure 9 Current De-rating

Figure 8 Safe Operation Area
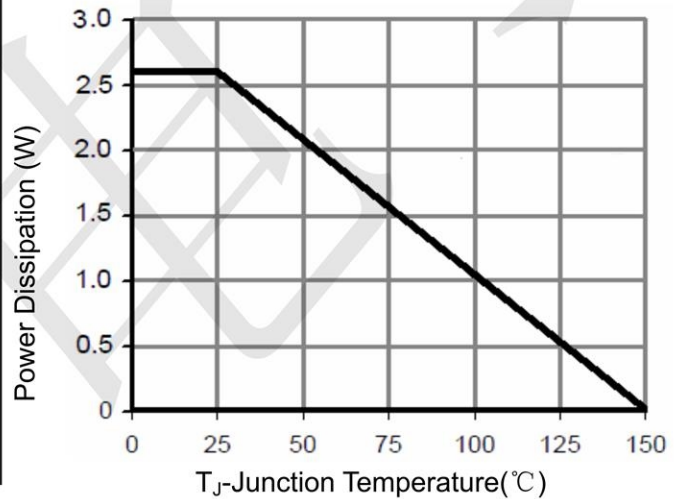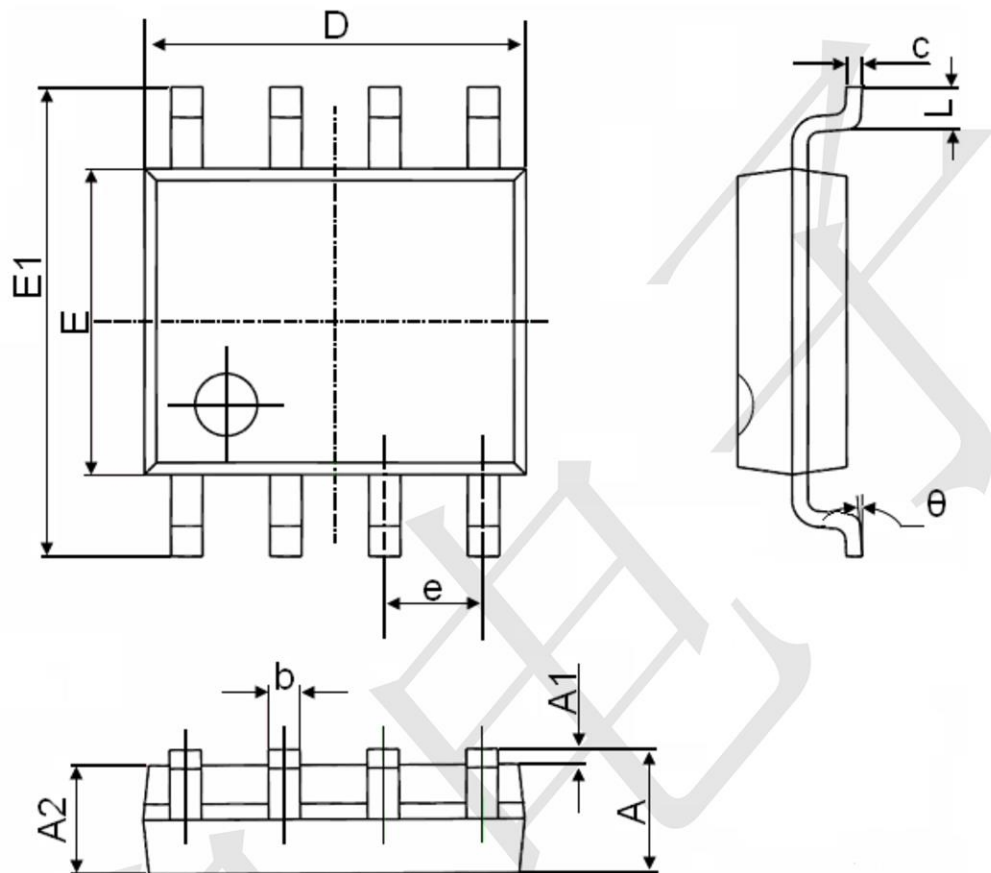
Figure 10 Power De-rating
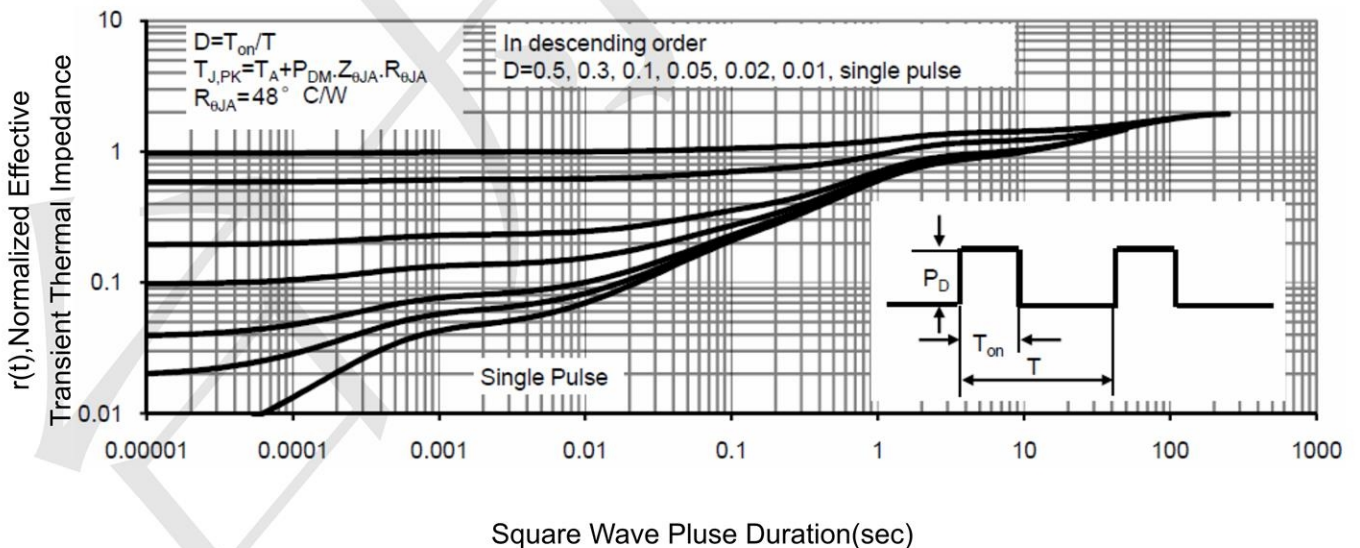
Figure 11 Normalized Maximum Transient Thermal Impedance

Square Wave Pluse Duration(sec)

SOP-8 Package Information

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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