

Features

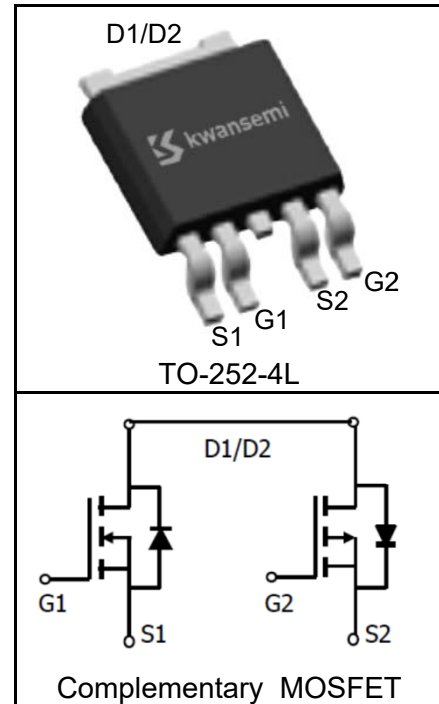
- N-Channel
40V/34A,
 $R_{DS(ON)} = 12m\Omega$ (Typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 18m\Omega$ (Typ.) @ $V_{GS}=4.5V$
- P-Channel
-40V/-23A,
 $R_{DS(ON)} = 28m\Omega$ (Typ.) @ $V_{GS}=-10V$
 $R_{DS(ON)} = 40m\Omega$ (Typ.) @ $V_{GS}=-4.5V$
- Very low on-resistance
- Fast Switching

Applications

- Load Switch



Pin Description



Absolute Maximum Ratings

| Symbol | Parameter | N-Channel | P-Channel | Unit |
|--|--|-------------------------|------------|--------------|
| Common Ratings ($T_A=25^\circ C$ Unless Otherwise Noted) | | | | |
| V_{DSS} | Drain-Source Voltage | 40 | -40 | V |
| V_{GSS} | Gate-Source Voltage | ± 20 | ± 20 | |
| T_J | Maximum Junction Temperature | 150 | 150 | $^\circ C$ |
| T_{STG} | Storage Temperature Range | -55 to 150 | -55 to 150 | $^\circ C$ |
| I_S | Diode Continuous Forward Current | $T_A=25^\circ C$ 34 | -23 | A |
| Mounted on Large Heat Sink | | | | |
| $I_{DP}^{①}$ | 300 μs Pulse Drain Current Tested | $T_C=25^\circ C$ 60 | -60 | A |
| $I_D^{②}$ | Continuous Drain Current($V_{GS}=\pm 10V$) | $T_C=25^\circ C$ 34 | -23 | A |
| | | $T_C=100^\circ C$ 21 | -14 | |
| P_D | Maximum Power Dissipation | $T_C=25^\circ C$ 31 | 31 | W |
| | | $T_C=100^\circ C$ 12 | 12 | |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | 4 | 4 | $^\circ C/W$ |
| $R_{\theta JA}^{③}$ | Thermal Resistance-Junction to Ambient | 100 | 100 | $^\circ C/W$ |
| Drain-Source Avalanche Ratings | | | | |
| $E_{AS}^{④}$ | Avalanche Energy, Single Pulsed | 25 | 36 | mJ |

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | KS4618DA4 | | | Unit | |
|--|----------------------------------|--|-----------|------|-------|-----------|------------|
| | | | Min. | Typ. | Max. | | |
| Static Characteristics | | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | N | 40 | | V | |
| | | $V_{GS}=0V, I_{DS}=-250\mu A$ | P | -40 | | | |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=40V, V_{GS}=0V$ | N | | 1 | μA | |
| | | $T_J=125^\circ C$ | | | 30 | | |
| | | $V_{DS}=-40V, V_{GS}=0V$ | P | | -1 | | |
| | | $T_J=125^\circ C$ | | | -30 | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | N | 1.3 | 1.8 | 2.4 | V |
| | | $V_{DS}=V_{GS}, I_{DS}=-250\mu A$ | P | -1.3 | -1.8 | -2.4 | |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0V$ | N | | | ± 100 | nA |
| | | $V_{GS}=\pm 20V, V_{DS}=0V$ | P | | | ± 100 | |
| $R_{DS(ON)}^{(5)}$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_{DS}=12A$ | N | | 12 | 18 | m Ω |
| | | $V_{GS}=-10V, I_{DS}=-12A$ | P | | 28 | 36 | |
| | | $V_{GS}=4.5V, I_{DS}=8A$ | N | | 18 | 25 | |
| | | $V_{GS}=-4.5V, I_{DS}=-8A$ | P | | 40 | 55 | |
| Diode Characteristics | | | | | | | |
| $V_{SD}^{(5)}$ | Diode Forward Voltage | $I_{SD}=12A, V_{GS}=0V$ | N | | 0.85 | 1.2 | V |
| | | $I_{SD}=-12A, V_{GS}=0V$ | P | | -0.85 | -1.2 | |
| t_{rr} | Reverse Recovery Time | N-Channel $I_{SD}=12A, dI_{SD}/dt=100A/\mu s$ | N | | 8.5 | | ns |
| | | | P | | 17 | | |
| Q_{rr} | Reverse Recovery Charge | P-Channel $I_{SD}=-12A, dI_{SD}/dt=100A/\mu s$ | N | | 8 | | nC |
| | | | P | | 7 | | |
| Dynamic Characteristics⁽⁶⁾ | | | | | | | |
| R_G | Gate Resistance | $V_{GS}=0V, V_{DS}=0V, F=1MHz$ | N | | 3.3 | | Ω |
| | | | P | | 9.5 | | |
| C_{iss} | Input Capacitance | N-Channel $V_{GS}=0V, V_{DS}=20V,$ Frequency=1.0MHz | N | | 1290 | | pF |
| | | | P | | 1310 | | |
| C_{oss} | Output Capacitance | P-Channel $V_{GS}=0V, V_{DS}=-20V,$ Frequency=1.0MHz | N | | 100 | | |
| | | | P | | 115 | | |
| C_{rss} | Reverse Transfer Capacitance | N-Channel $V_{GS}=0V, V_{DS}=-20V,$ Frequency=1.0MHz | N | | 85 | | |
| | | | P | | 90 | | |

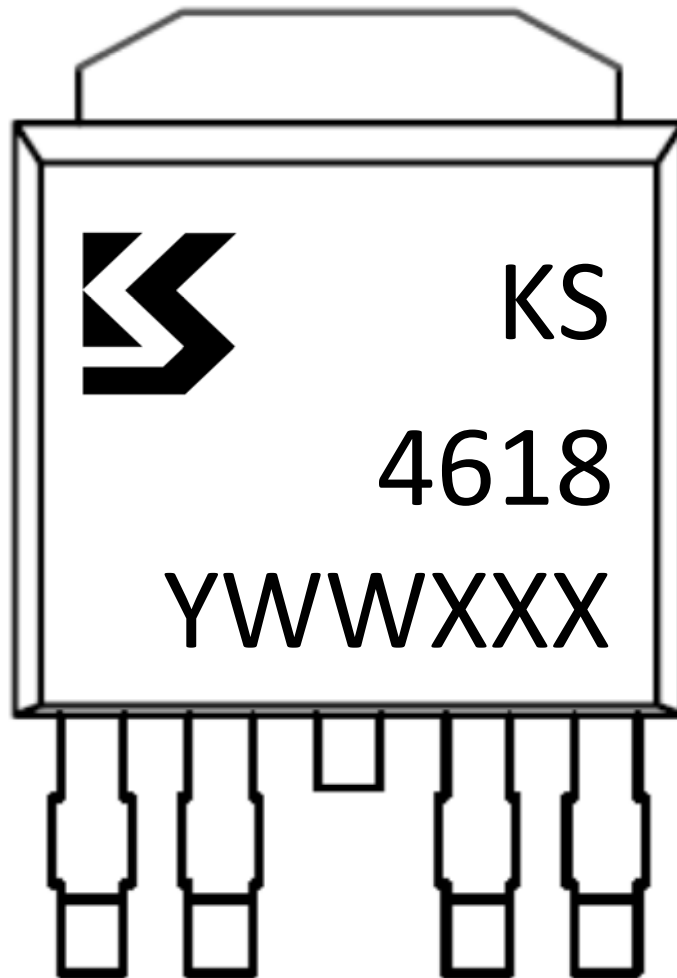
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | KS4618DA4 | | | Unit | |
|---|---------------------|---|-----------|------|------|------|----|
| | | | Min. | Typ. | Max. | | |
| Dynamic Characteristics ^⑥ | | | | | | | |
| $t_{d(ON)}$ | Turn-on Delay Time | N-Channel $V_{DD}=20\text{V}$, $I_{DS}=12\text{A}$, $V_{GEN}=10\text{V}$, $R_G=3\Omega$ P-Channel $V_{DD}=-20\text{V}$, $I_{DS}=-12\text{A}$, $V_{GEN}=-10\text{V}$, $R_G=3\Omega$ | N | | 7.5 | | ns |
| | | | P | | 9 | | |
| t_r | Turn-on Rise Time | | N | | 4.8 | | |
| | | | P | | 7 | | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | N | | 24 | | |
| | | | P | | 39 | | |
| t_f | Turn-off Fall Time | | N | | 5.5 | | |
| | | | P | | 11 | | |
| Gate Charge Characteristics ^⑥ | | | | | | | |
| Q_g | Total Gate Charge | N-Channel $V_{DS}=20\text{V}$, $V_{GS}=10\text{V}$, $I_{DS}=12\text{A}$ P-Channel $V_{DS}=-20\text{V}$, $V_{GS}=-10\text{V}$, $I_{DS}=-12\text{A}$ | N | | 18 | | nC |
| | | | P | | 25 | | |
| Q_{gs} | Gate-Source Charge | | N | | 3.5 | | |
| | | | P | | 4 | | |
| Q_{gd} | Gate-Drain Charge | | N | | 4.2 | | |
| | | | P | | 6 | | |

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} . Starting $T_J = 25^{\circ}\text{C}$, N Channel: $L = 0.5\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 10\text{A}$, $V_{GS} = 10\text{V}$, P-Channel: $L = 0.5\text{mH}$, $R_G = 25\Omega$, $I_{AS} = -12\text{A}$, $V_{GS} = -10\text{V}$, Part not recommended for use above this value.
 - ⑤ Pulse test; Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

| Device | Package | Packaging | Quantity | Reel Size | Tape width |
|-----------|-----------|-----------|----------|-----------|------------|
| KS4618DA4 | TO-252-4L | Tape&Reel | 2500 | 13" | 16mm |

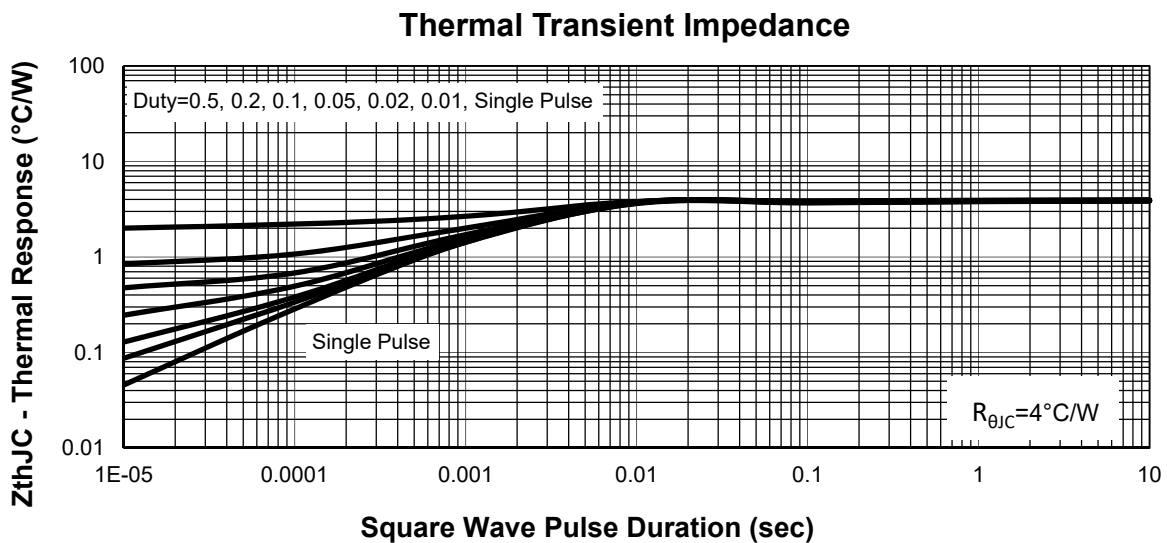
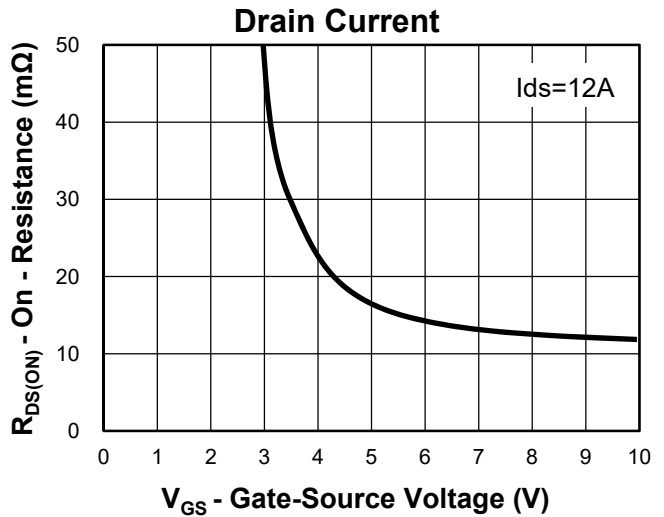
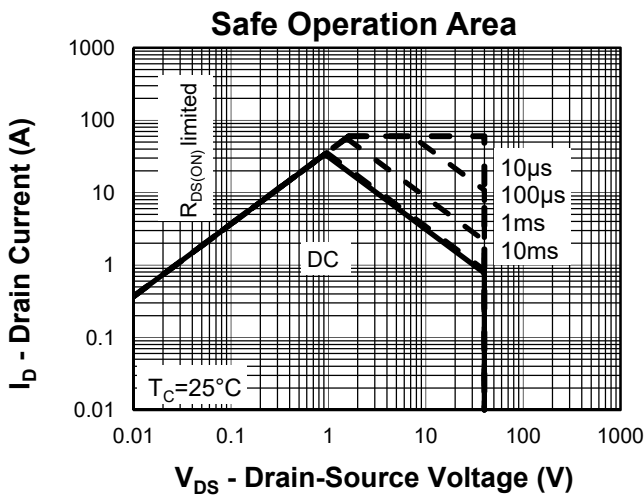
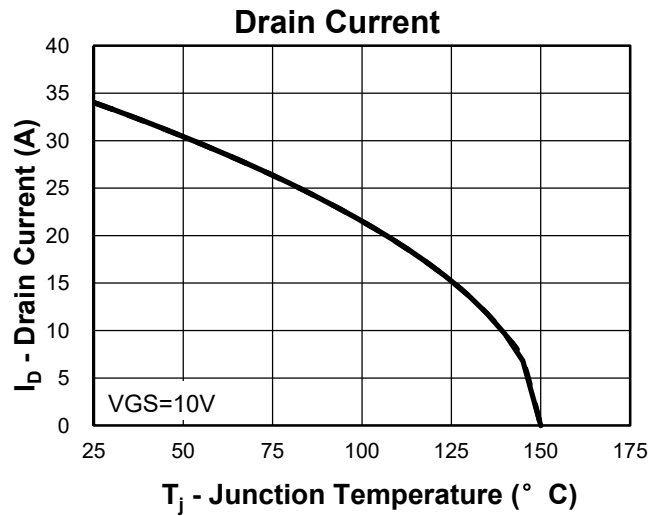
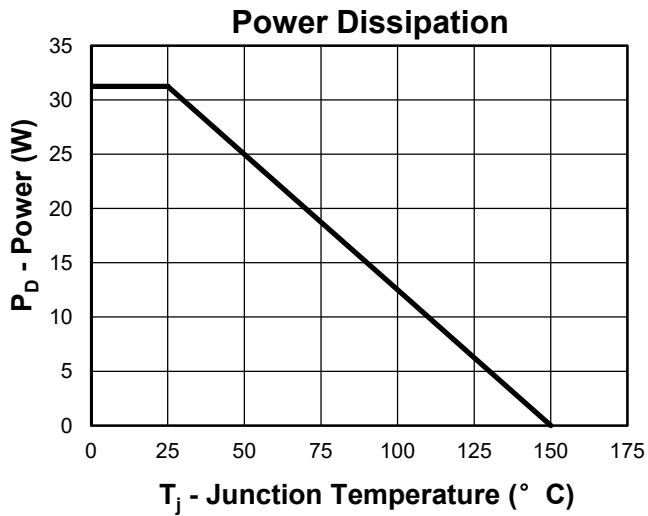


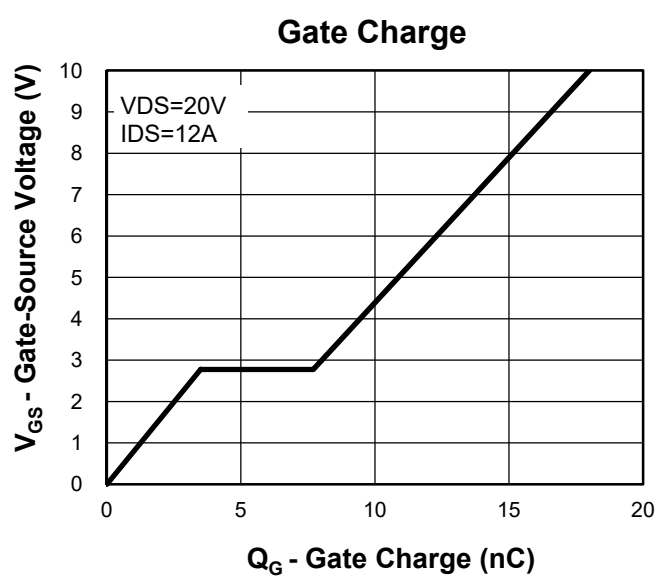
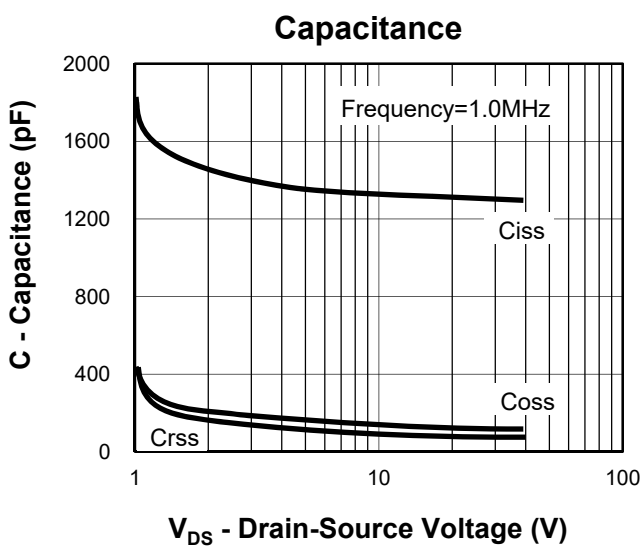
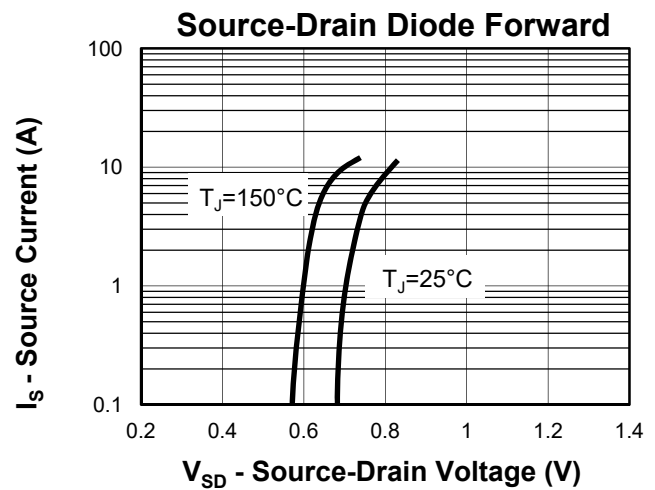
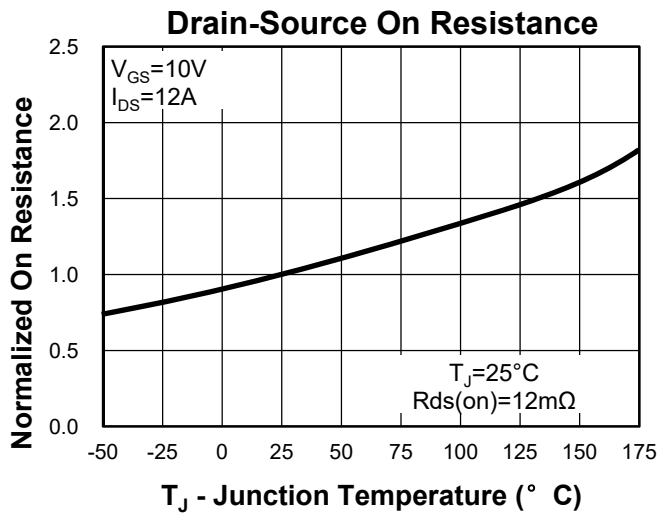
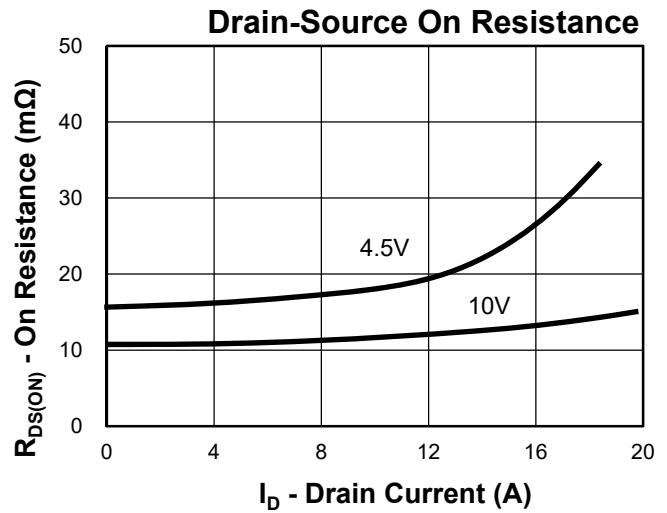
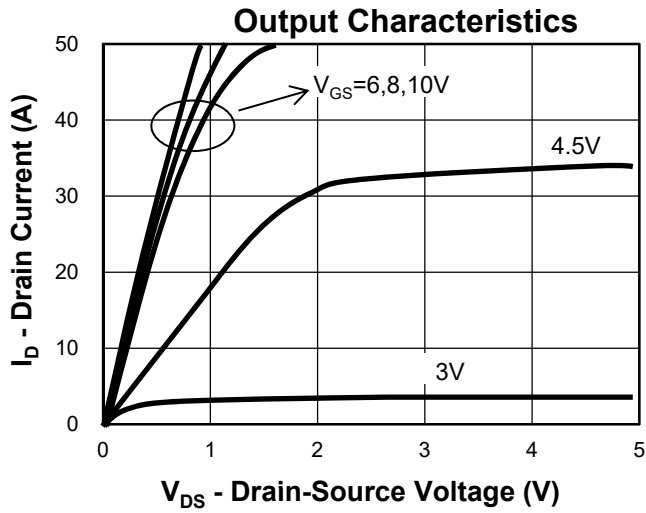
Y =Year,2017-A,2018-B,etc.

WW =Week.

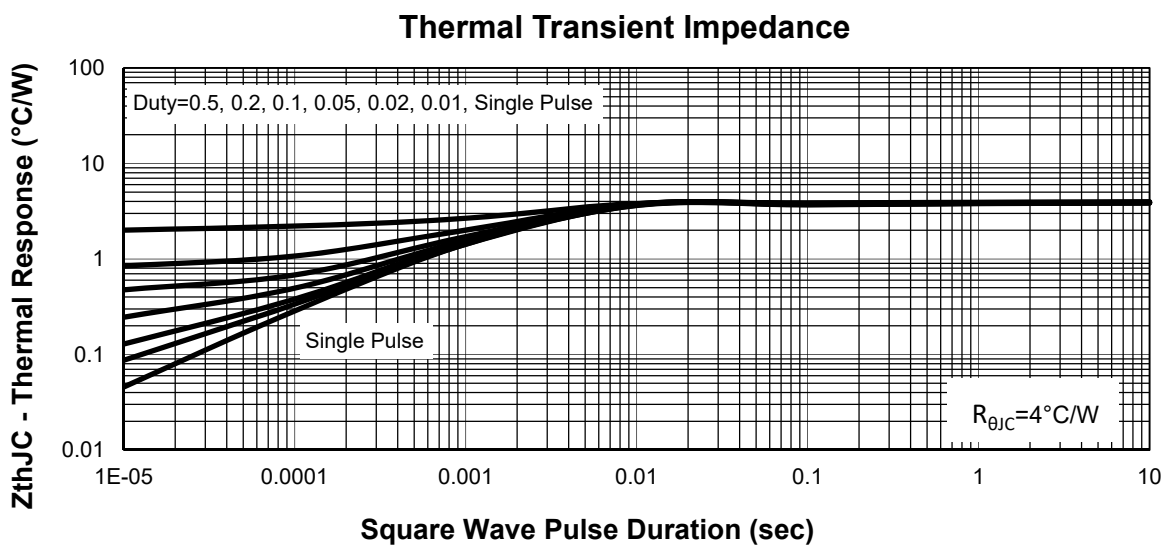
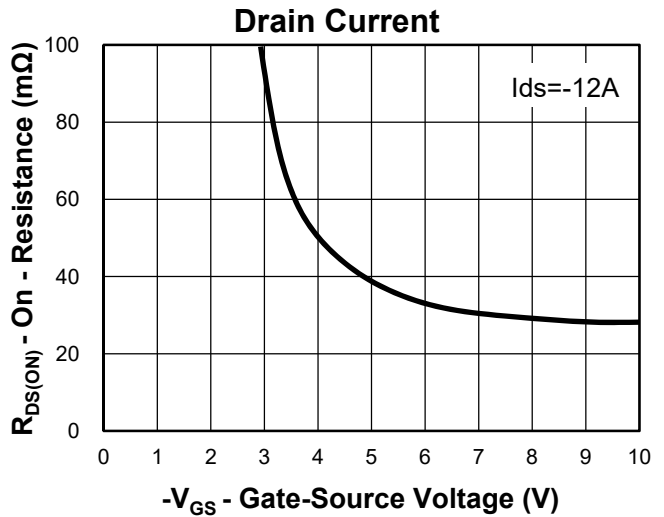
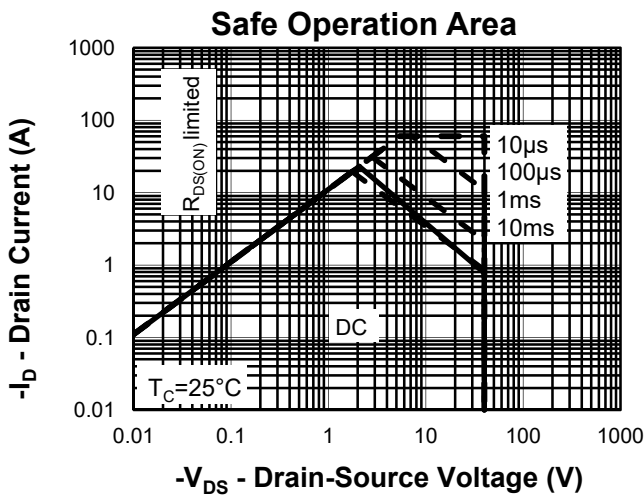
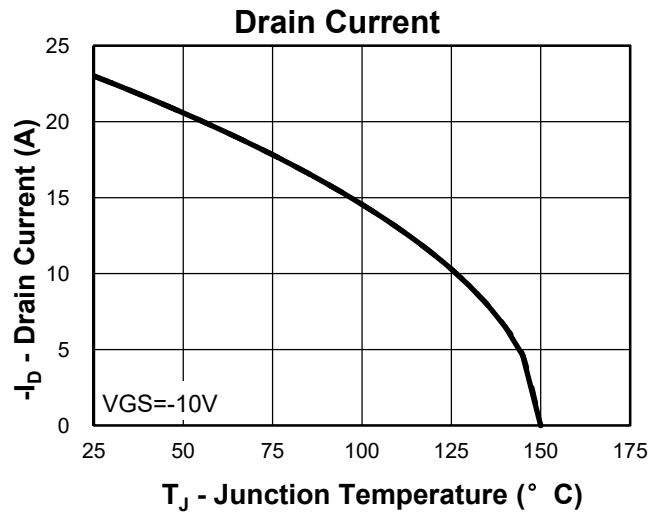
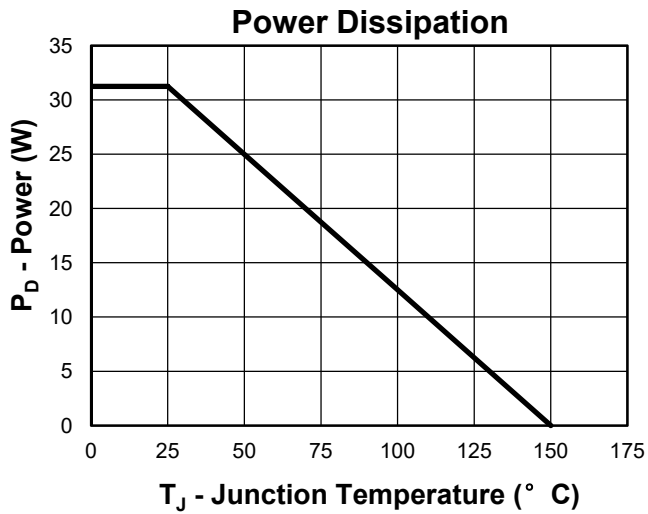
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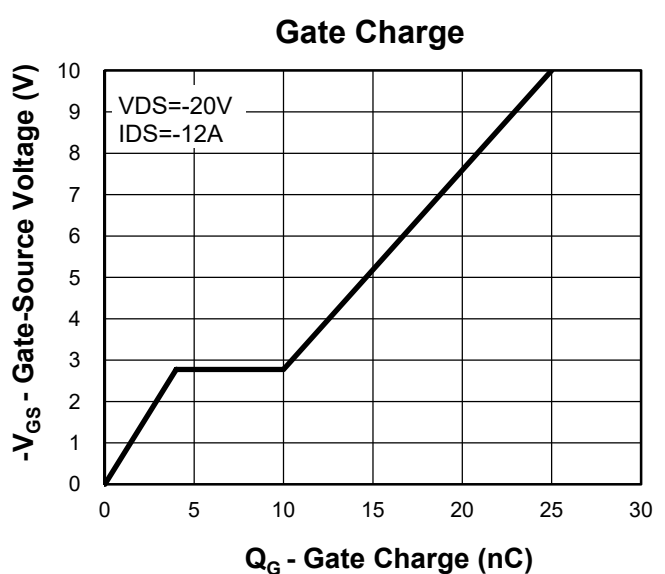
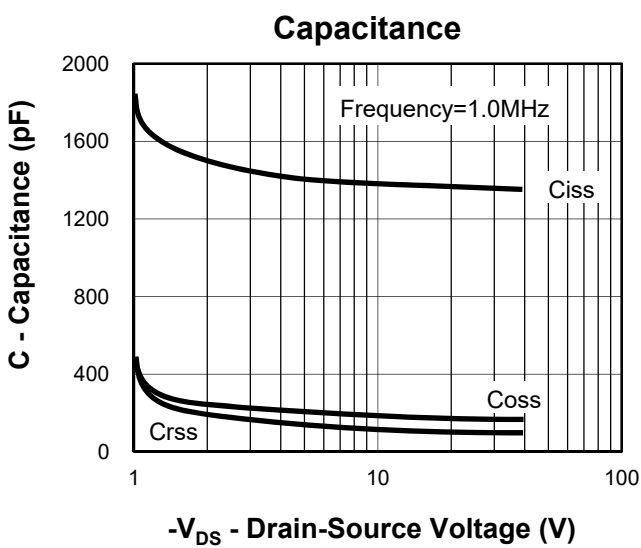
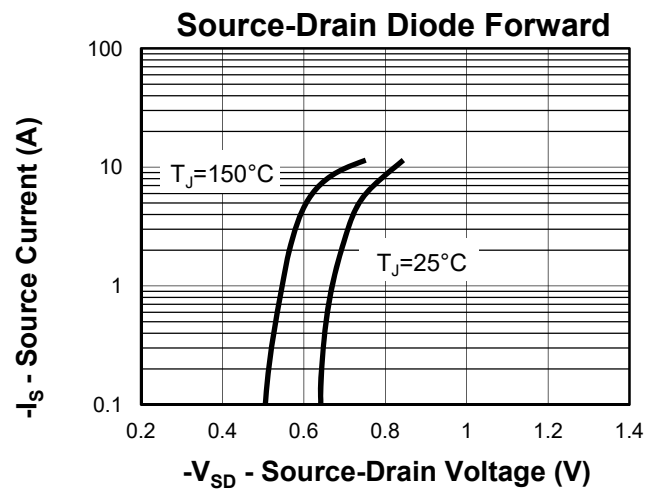
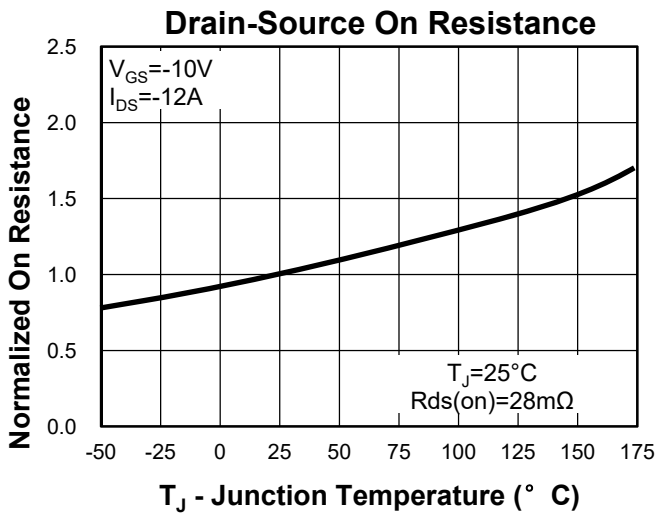
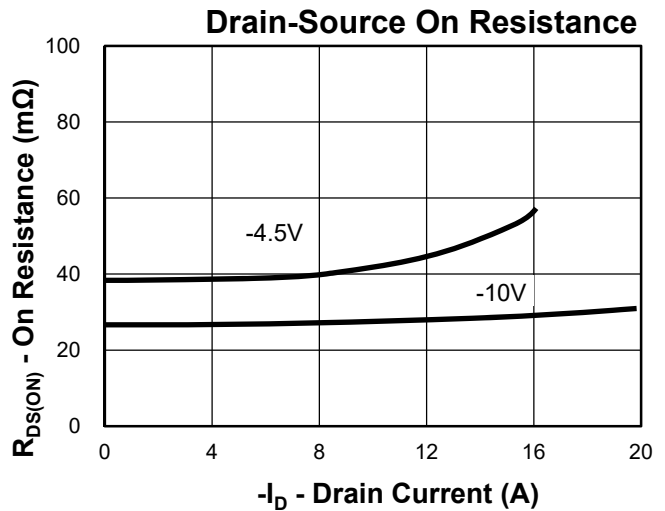
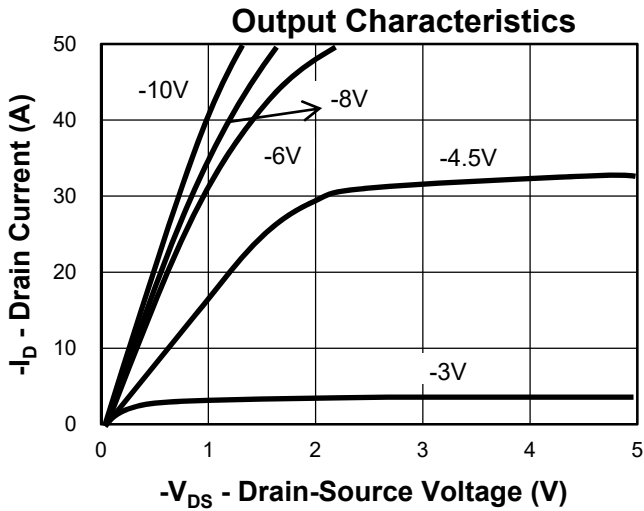
Typical Characteristics(N-Channel)

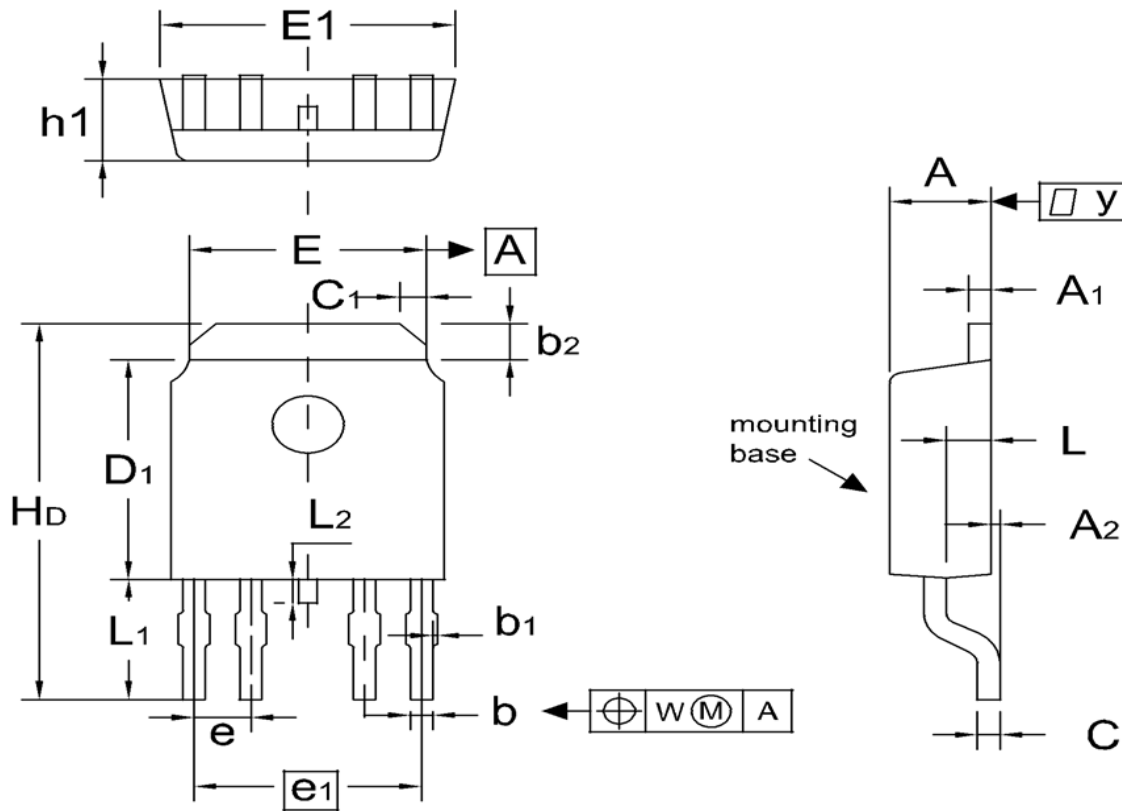


Typical Characteristics(N-Channel)


Typical Characteristics(P-Channel)

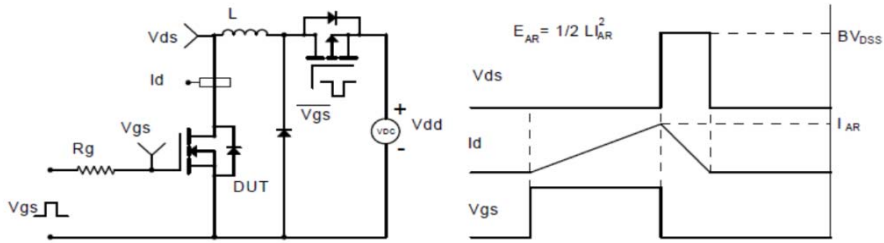


Typical Characteristics(P-Channel)


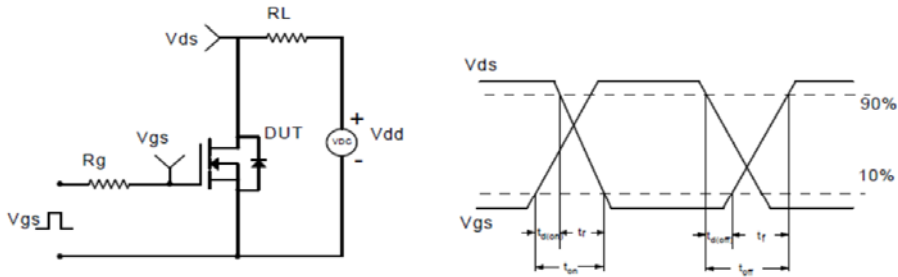
Package Information
TO-252-4L


| SYMBOL | MM | | | INCH | | |
|----------------|-------|-----------|-------|-------|----------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 2.190 | 2.285 | 2.380 | 0.086 | 0.090 | 0.094 |
| A1 | 0.460 | 0.650 | 0.880 | 0.018 | 0.026 | 0.035 |
| A2 | -- | -- | 0.127 | -- | -- | 0.005 |
| b | 0.510 | 0.610 | 0.710 | 0.020 | 0.024 | 0.028 |
| b1 | -- | -- | 0.100 | -- | -- | 0.004 |
| b2 | 0.890 | 1.080 | 1.270 | 0.035 | 0.043 | 0.050 |
| C | 0.460 | 0.530 | 0.600 | 0.018 | 0.021 | 0.024 |
| C1 | 0.400 | 0.600 | 0.800 | 0.016 | 0.024 | 0.031 |
| D1 | 5.970 | 6.095 | 6.220 | 0.235 | 0.240 | 0.245 |
| E | 4.320 | 4.890 | 5.460 | 0.170 | 0.193 | 0.215 |
| E1 | 6.350 | 6.540 | 6.730 | 0.250 | 0.257 | 0.265 |
| e | | 1.270 BSC | | | 0.05 BSC | |
| e1 | | 5.080 BSC | | | 0.20 BSC | |
| H _n | 9.60 | 10.00 | 10.40 | 0.378 | 0.39 | 0.409 |
| h1 | 2.19 | 2.29 | 2.38 | 0.086 | 0.09 | 0.094 |
| L | 0.80 | 1.00 | 1.20 | 0.031 | 0.04 | 0.047 |
| L1 | 2.60 | 2.90 | 3.20 | 0.102 | 0.11 | 0.126 |
| L2 | 0.350 | 0.650 | 0.950 | 0.014 | 0.026 | 0.037 |

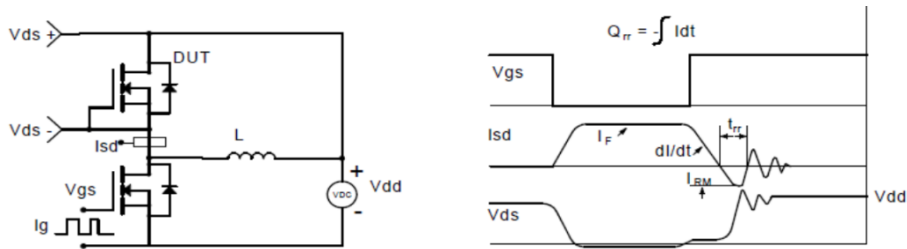
Avalanche Test Circuit and Waveforms(N-Channel)



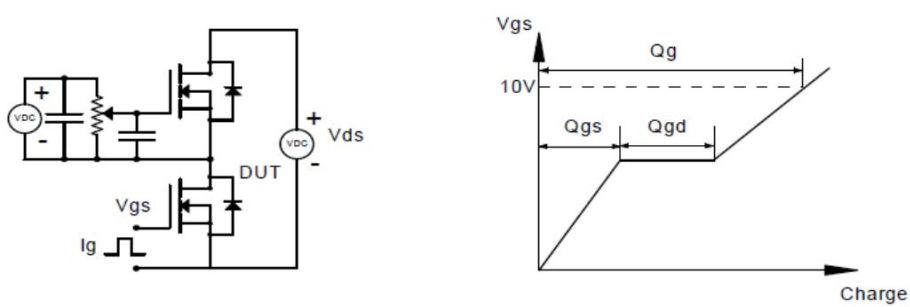
Switching Time Test Circuit and Waveforms(N-Channel)

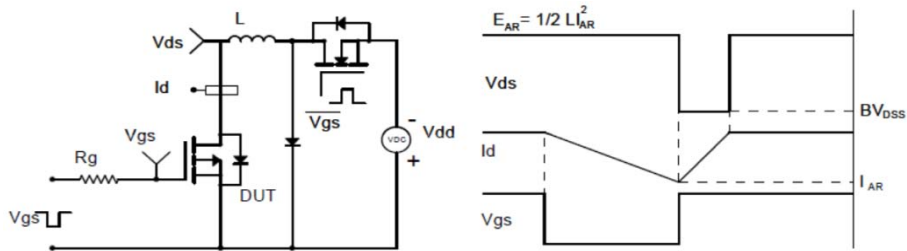
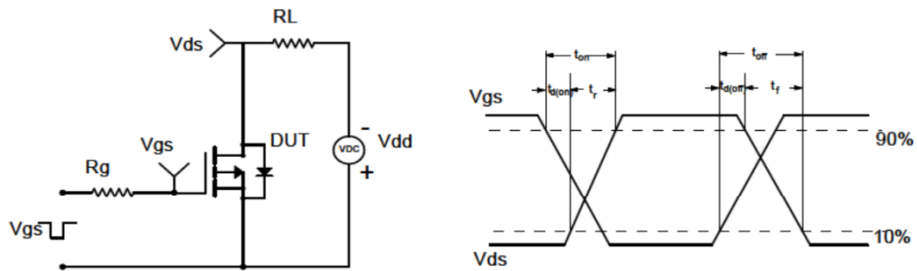
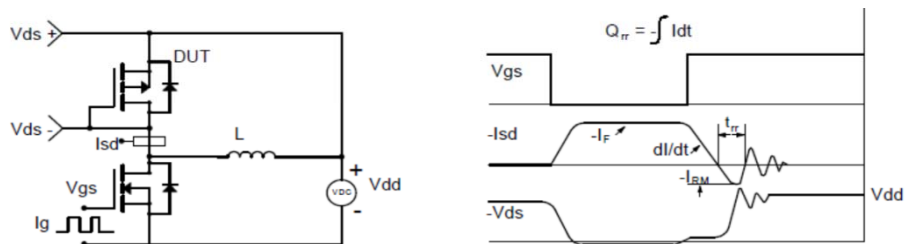
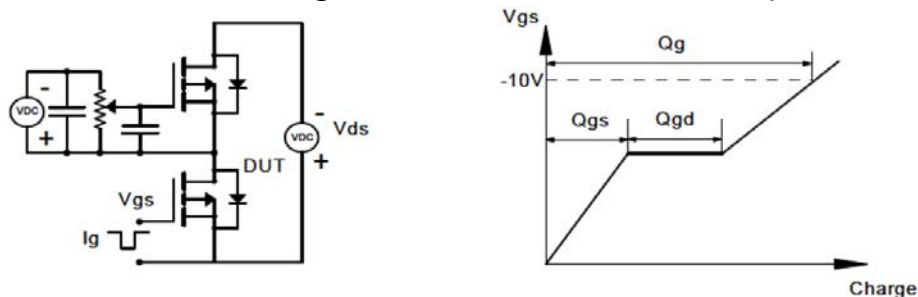


Diode Recovery Test Circuit and Waveforms(N-Channel)



Gate Charge Test Circuit and Waveform(N-Channel)



Avalanche Test Circuit and Waveforms(P-Channel)

Switching Time Test Circuit and Waveforms(P-Channel)

Diode Recovery Test Circuit and Waveforms(P-Channel)

Gate Charge Test Circuit and Waveform(P-Channel)

Customer Service

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