New Jersey Semi-Conductor Products, Inc.

20 STERN AVE. SPRINGFIELD, NEW JERSEY 07081 U.S.A.

TELEPHONE: (973) 376-2922 (212) 227-6005 FAX: (973) 376-8960

## Designer's Data Sheet **Power Field Effect Transistor** N-Channel Enhancement-Mode Silicon Gate

This TMOS Power FET is designed for low voltage, high speed power switching applications such as switching regulators, converters, solenoid and relay drivers.

 Silicon Gate for Fast Switching Speeds — Switching Times Specified at 100°C

Rating

- Designer's Data IDSS, VDS(on), VGS(th) and SOA Specified at Elevated Temperature
- Rugged SOA is Power Dissipation Limited

**MAXIMUM RATINGS** 

**Drain-Source Voltage** 

Drain-Gate Voltage (R<sub>GS</sub> = 1 M $\Omega$ )

Gate-Source Voltage --- Continuous

- Pulsed

Total Power Dissipation @ T<sub>C</sub> = 25°C

**Operating and Storage Temperature Range** 

Maximum Lead Temperature for Soldering

Purposes, 1/8" from case for 5 seconds

Drain Current --- Continuous

THERMAL CHARACTERISTICS

Derate above 25°C

Thermal Resistance

Junction to Case

Junction to Ambient

Source-to-Drain Diode Characterized for Use With Inductive Loads

Non-repetitive (t<sub>p</sub> ≤ 50 μs)



Unit

Vdc

Vdc

Vdc Vpk

Adc

Watts

W/°C

°C

°C/W

°C

TMOS POWER FET 15 AMPERES RDS(on) = 0.1 OHM 50 VOLTS

**MTP15N05E** 



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NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Value

50 50

 $\pm 20$ 

±40

15

40

75

0.6

- 65 to 150

1.67

62.5

260

Symbol

VDSS

VDGR

VGS

VGSM

ID.

**IDM** 

PD

Tj, Tatg

ROJC

RøJA

ΤL

TO-220

## **Quality Semi-Conductors**

## MTP15N05E

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

| OFF CHARACTERISTICSDrain-Source Breakdown Voltage<br>(VGS = 0, ID = 0.25 mA)V(BR)DS:<br>(VBS = 0, ID = 0.25 mA)V(BR)DS:Zero Gate Voltage Drain Current<br>(VDS = Rated VDSS, VGS = 0, TJ = 125°C)IDSSGate-Body Leakage Current, Forward (VGSF = 20 Vdc, VDS = 0)IGSSFGate-Body Leakage Current, Reverse (VGSR = 20 Vdc, VDS = 0)IGSSFGate-Body Leakage Current, Reverse (VGSR = 20 Vdc, VDS = 0)IGSSFON CHARACTERISTICS*Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)FDS(on)Tj = 100°CStatic Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)FDS(on)UD = 15 Adc)<br>(ID = 7 5 Adc, TJ = 100°C)VDS(on)VDS(on)Input Capacitance<br>Reverse Transfer Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)<br>See Figure 11CissSWITCHING CHARACTERISTICS*<br>Turn-On Delay Time(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14td(off)Rise Time<br>Turn-Off Delay Time(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 VGS = 10<br>VGS = 10 VGS = 10   | 5 50<br>                                | 10<br>100<br>100<br>100<br>4.5<br>4<br>0.1<br>2.9<br>2.4<br>-<br>700<br>400<br>200 | Vdc<br>μAdc<br>nAdc<br>nAdc<br>Vdc<br>Ohm<br>Vdc<br>mhos       |
|---|---|--|--|
| Drain-Source Breakdown Voltage<br>(VGS = 0, ID = 0.25 mA)V(BRIDS:<br>(VBS = Rated VDSS, VGS = 0)Zero Gate Voltage Drain Current<br>(VDS = Rated VDSS, VGS = 0, TJ = 125°C)IDSSGate-Body Leakage Current, Forward (VGSF = 20 Vdc, VDS = 0)IGSSFGate-Body Leakage Current, Reverse (VGSR = 20 Vdc, VDS = 0)IGSSRON CHARACTERISTICS*Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)RDS(on)Drain-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)<br>(ID = 7 5 Adc, TJ = 100°C)VDS(on)VDS(on)Input Capacitance<br>Reverse Transfer Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)<br>See Figure 11CassSWITCHING CHARACTERISTICS*<br>(Turn-Off Delay Time<br>Fail Time(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figure 9, 13 and 14tfTotal Gate Charge<br>Gate-Drain Charge(VDS = 0.8 Rated VDSS,<br>QgQgGate-Drain Charge(VDS = 0.8 Rated VDSS,<br>QgQgSOURCE DRAIN DIODE CHARACTERISTICS*ID = Rated ID, VGS = 10 V)<br>Qg addQg   | 5         50                            | 10<br>100<br>100<br>100<br>4.5<br>4<br>0.1<br>2.9<br>2.4<br>-<br>700<br>400<br>200 | Vdc<br>μAdc<br>nAdc<br>nAdc<br>Vdc<br>Ohm<br>Vdc<br>mhos<br>pF |
| Zero Gate Voltage Drain Current<br>(VDS = Rated VDSS, VGS = 0)<br>(VDS = Rated VDSS, VGS = 0, TJ = 125°C)IDSSGate-Body Leakage Current, Forward (VGSF = 20 Vdc, VDS = 0)IGSSFGate-Body Leakage Current, Reverse (VGSR = 20 Vdc, VDS = 0)IGSSRON CHARACTERISTICS*Gate Threshold Voltage<br>(VDS = VGS, ID = 1 mA)<br>TJ = 100°CVGS(th)Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)RDS(an)Or in-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)VDS(an)(ID = 15 Adc)VDS(an)(ID = 7 5 Adc, TJ = 100°C)YDS(an)Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICS(VDS = 25 V, VGS = 0,<br>f = 1 MH2)CossInput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MH2)CossSWITCHING CHARACTERISTICS* (TJ = 100°C)Turn-On Delay Time(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)td(on)Rise Time(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figures 9, 13 and 14td(off)Fail Time(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12QgSOURCE DRAIN DIODE CHARACTERISTICS*ID = Rated ID, VGS = 10 V)<br>See Figure 12Qgd  |   | 10<br>100<br>100<br>100<br>4.5<br>4<br>0.1<br>2.9<br>2.4<br><br>700<br>400<br>200  | μAdc<br>nAdc<br>nAdc<br>Vdc<br>Ohm<br>Vdc<br>mhos              |
| Gate-Body Leakage Current, Forward (VGSF = 20 Vdc, VDS = 0)IGSSFGate-Body Leakage Current, Reverse (VGSR = 20 Vdc, VDS = 0)IGSSRON CHARACTERISTICS*Gate Threshold Voltage<br>(VDS = VGS, ID = 1 mA)<br>T J = 100°CVGS(th)Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)RDS(an)Drain-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)VDS(on)(ID = 15 Adc)<br>(ID = 7 5 Adc, T J = 100°C)VDS(on)Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICSSee Figure 11Input Capacitance<br>Reverse Transfer Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)<br>See Figure 11CossCissSWITCHING CHARACTERISTICS* (TJ = 100°C)Turn-On Delay TimeTurn-On Delay Time(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14Fall Time<br>Total Gate Charge<br>Gate-Drain Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12Gate-Drain Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12  | 2<br>15<br>                             | 100<br>100<br>4.5<br>4<br>0.1<br>2.9<br>2.4<br>-<br>700<br>400<br>200              | nAdc<br>nAdc<br>Vdc<br>Ohm<br>Vdc<br>mhos                      |
| Gate-Body Leakage Current, Reverse $(V_{GSR} = 20 \text{ Vdc}, V_{DS} = 0)$ IGSSRON CHARACTERISTICS*Gate Threshold Voltage<br>$(V_{DS} = V_{GS}, I_D = 1 \text{ mA})$<br>$T_J = 100°C$ $V_{GS}(th)$ $V_{GS}(th)$ Static Drain-Source On-Resistance $(V_{GS} = 10 \text{ Vdc}, I_D = 7.5 \text{ Adc})$ $R_{DS}(on)$ Drain-Source On-Voltage $(V_{GS} = 10 \text{ V})$<br>$(I_D = 15 \text{ Adc})$ $V_{DS}(= 10 \text{ V})$ $V_{DS}(on)$ $(I_D = 7.5 \text{ Adc}, T_J = 100°C)$ $V_{DS}(= 15 \text{ V}, I_D = 7.5 \text{ A})$ $9FS$ DYNAMIC CHARACTERISTICSInput Capacitance $(V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz})$<br>$See Figure 11$ $C_{oss}$ Reverse Transfer Capacitance $(V_{DD} = 25 \text{ V}, I_D = 0.5 \text{ Rated ID}$<br>$R_{gen} = 50 \text{ ohms})$<br>$See Figures 9, 13 and 14$ $t_d(on)$ Turn-On Delay Time $(V_{DS} = 0.8 \text{ Rated V}_{DSS, Og$<br>$Gate-Orain Charge(V_{DS} = 0.8 \text{ Rated V}_{DSS, OgI_D = \text{ Rated ID}, V_{GS} = 10 \text{ V})Gate-Orain Charge(V_{DS} = 0.8 \text{ Rated V}_{DSS, OgGgdte-Orain ChargeQ_g$   |   | 100<br>4.5<br>4<br>0.1<br>2.9<br>2.4<br>-<br>700<br>400<br>200                     | nAdc<br>Vdc<br>Ohm<br>Vdc<br>mhos                              |
| ON CHARACTERISTICS*Gate Threshold Voltage<br>(VDS = VGS, ID = 1 mA)<br>T.J = 100°CVGS(th)Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)RDS(on)Drain-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)<br>(ID = 7.5 Adc, T.J = 100°C)VDS(on)Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICS(VDS = 25 V, VGS = 0,<br>f = 1 MH2)<br>See Figure 11CissInput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MH2)<br>See Figure 11CissSWITCHING CHARACTERISTICS*(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14td(on)<br>trTurn-Off Delay Time<br>Total Gate Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12Og<br>QgsGate-Orain Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12Og<br>Qgs   | 2<br>15<br>—<br>—<br>3.5<br>—<br>—<br>— | 4.5<br>4<br>0.1<br>2.9<br>2.4<br><br>700<br>400<br>200                             | Vdc<br>Ohm<br>Vdc<br>mhos                                      |
| Gate Threshold Voltage<br>$(V_{DS} = V_{GS}, I_D = 1 \text{ mA})$<br>$T_J = 100°C$ VGS(th)Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 7.5 Adc)RDS(on)Drain-Source On-Voltage (V_{GS} = 10 V)<br>$(I_D = 15 \text{ Adc})$<br>$(I_D = 7.5 \text{ Adc}, T_J = 100°C)$ VDS(on)Forward Transconductance (V_{DS} = 15 V, I_D = 7.5 A)9FSDYNAMIC CHARACTERISTICS(V_{DS} = 25 V, V_{GS} = 0,<br>f = 1 MHz)<br>See Figure 11Ciss<br>CossInput Capacitance<br>Reverse Transfer Capacitance(V_{DS} = 25 V, V_{GS} = 0,<br>f = 1 MHz)<br>See Figure 11Ciss<br>CossSWITCHING CHARACTERISTICS*(V_DD = 25 V, I_D = 0.5 Rated I_D<br>Rgan = 50 ohms)<br>See Figures 9, 13 and 14td(on)<br>trTurn-Off Delay Time<br>Turn-Off Delay Time(V_DS = 0.8 Rated V_DSS,<br>I_D = Rated I_D, V_GS = 10 V)<br>See Figure 12Og<br>QgsGate-Orain Charge<br>SOURCE DRAIN DIODE CHARACTERISTICS*(V_DS = 0.8 Rated I_D, V_GS = 10 V)<br>See Figure 12Og<br>Qgs  | 2<br>15<br>                             | 4.5<br>4<br>0.1<br>2.9<br>2.4<br>-<br>700<br>400<br>200                            | Vdc<br>Ohm<br>Vdc<br>mhos                                      |
| Static Drain-Source On-Resistance (VGS = 10 Vdc, ID = 7.5 Adc)RDS(on)Drain-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)<br>(ID = 7.5 Adc, TJ = 100°C)VDS(on)VDS(on)Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICSInput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)CissOutput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)CissReverse Transfer Capacitance(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)td(on)Turn-On Delay Time(VDS = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)td(onf)Turn-Off Delay Time(VDS = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)td(off)Fail Time(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)OgGate-Drain Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)OgSOURCE DRAIN DIODE CHARACTERISTICS*fID P  |   | 0.1<br>2.9<br>2.4<br>—<br>700<br>400<br>200  | Ohm<br>Vdc<br>mhos   |
| Drain-Source On-Voltage (VGS = 10 V)<br>(ID = 15 Adc)<br>(ID = 7 5 Adc, TJ = 100°C)VDS(on)Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICS(VDS = 25 V, VGS = 0,<br>f = 1 MHz)<br>See Figure 11CissInput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)<br>See Figure 11CissSWITCHING CHARACTERISTICS*(VDD = 25 V, ID = 0.5 Rated ID<br>Rgan = 50 ohms)<br>See Figures 9, 13 and 14td(on)<br>trTurn-Off Delay Time<br>Total Gate Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12Og<br>QgsGate-Drain Charge(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12Og<br>Qgs  | 3.5                                     | 2.9<br>2.4<br>—<br>700<br>400<br>200   | Vdc<br>mhos  |
| Forward Transconductance (VDS = 15 V, ID = 7.5 A)9FSDYNAMIC CHARACTERISTICSInput Capacitance(VDS = 25 V, VGS = 0,<br>f = 1 MHz)CissOutput CapacitanceSee Figure 11CossReverse Transfer CapacitanceSee Figure 11CrssSWITCHING CHARACTERISTICS* (TJ = 100°C)Turn-On Delay Timetd(on)Turn-On Delay Time(VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14td(onf)Fail Time(VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12OgGate-Drain Charge(VDS = 0.8 Rated ID, VGS = 10 V)<br>See Figure 12OgSOURCE DRAIN DIODE CHARACTERISTICS*f  | 3.5                                     | 700<br>400<br>200  | pF   |
| DYNAMIC CHARACTERISTICSInput Capacitance $(V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz)$ $C_{iss}$ Output CapacitanceSee Figure 11 $C_{oss}$ Reverse Transfer CapacitanceSee Figure 11 $C_{rss}$ SWITCHING CHARACTERISTICS* (TJ = 100°C)Turn-On Delay Time $(V_{DD} = 25 V, I_D = 0.5 Rated I_D Rgan = 50 ohms)$ $td(on)$ Turn-Off Delay Time $(V_{DS} = 0.8 Rated V_{DSS}, 0.9 High = 0.5 Rated I_D Rgan = 50 ohms)$ $td(off)$ Turn-Off Delay Time $(V_{DS} = 0.8 Rated V_{DSS}, 0.9 High = 0.5 Rated I_D Rgan = 50 ohms)$ $td(off)$ Total Gate Charge $(V_{DS} = 0.8 Rated V_{DSS}, 0.9 High = 0.5 Rated I_D, V_{GS} = 10 V)$ $Q_{gs}$ Gate-Drain Charge $(V_{DS} = 0.8 Rated I_D, V_{GS} = 10 V)$ $Q_{gd}$ SOURCE DRAIN DIODE CHARACTERISTICS* $f$ $Q_{gd}$   |   | 700<br>400<br>200  | pF   |
|   |   | 700<br>400<br>200  | pF   |
| Output Capacitancef = 1 MH2)<br>See Figure 11CossReverse Transfer CapacitanceSee Figure 11CrssSWITCHING CHARACTERISTICS* (TJ = 100°C)Turn-On Delay Time $(V_{DD} = 25 V, I_D = 0.5 Rated I_D)$<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14td(on)Turn-Off Delay Time $(V_{DD} = 25 V, I_D = 0.5 Rated I_D)$<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14td(off)Turn-Off Delay Time $(V_{DS} = 0.8 Rated V_{DSS}, I_D = Rated I_D, V_{GS} = 10 V)$<br>See Figure 12 $Q_g$ Gate-Orain Charge $(V_{DS} = 0.8 Rated V_{DSS}, I_D = Rated I_D, V_{GS} = 10 V)$<br>See Figure 12 $Q_{gd}$ SOURCE DRAIN DIODE CHARACTERISTICS* $f$   |   | 400  | -1   |
| Reverse Transfer Capacitance     See Figure 11     Crss       SWITCHING CHARACTERISTICS* (TJ = 100°C)     Turn-On Delay Time     td(on)       Turn-On Delay Time     (VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)     td(on)       Turn-Off Delay Time     (VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)     td(off)       Fail Time     tf     td(off)       Total Gate Charge     (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)     Qg       Gate-Drain Charge     See Figure 12     Qgd       SOURCE DRAIN DIODE CHARACTERISTICS*     Comparison     Comparison  |   | 200  |  |
| SWITCHING CHARACTERISTICS* (TJ = 100°C)         Turn-On Delay Time         Rise Time       (VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14       td(on)         Turn-Off Delay Time       See Figures 9, 13 and 14       tr         Fail Time       (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)       Og         Gate-Drain Charge       (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)       Ogs         SOURCE DRAIN DIODE CHARACTERISTICS*       Content       Content  |   |  | 1  |
| Turn-On Delay Time     td(on)       Rise Time     (VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)<br>See Figures 9, 13 and 14     tr       Turn-Off Delay Time     See Figures 9, 13 and 14     td(off)       Fall Time     (VDS = 0.8 Rated VDSS,<br>Gate-Source Charge     Og       Gate-Drain Charge     (VDS = 0.8 Rated ID, VGS = 10 V)<br>See Figure 12     Og       SOURCE DRAIN DIODE CHARACTERISTICS*     Content of the top of top of the top of top of the top of   |   |  |  |
| Rise Time     (VDD = 25 V, ID = 0.5 Rated ID<br>Rgen = 50 ohms)     tr       Turn-Off Delay Time     See Figures 9, 13 and 14     td(off)       Fall Time     tf       Total Gate Charge     (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)     Og       Gate-Drain Charge     See Figure 12     Ogs       SOURCE DRAIN DIODE CHARACTERISTICS*     Control Charge     Control Charge  | _                                       | 50   | ns   |
| Turn-Off Delay Time     td(off)       Fail Time     See Figures 9, 13 and 14     td(off)       Fail Time     (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)     Qg       Gate-Drain Charge     See Figure 12     Qgd       SOURCE DRAIN DIODE CHARACTERISTICS*     Control of the set of t  | -                                       | 150  | -  |
| Fail Time     tr       Total Gate Charge     (VDS = 0.8 Rated VDSS,<br>ID = Rated ID, VGS = 10 V)<br>See Figure 12     Og       Gate-Drain Charge     See Figure 12     Ogs       SOURCE DRAIN DIODE CHARACTERISTICS*     Control of the text of tex of text of text of text of text of text of tex   |   | 200  |  |
| Total Gate Charge     (V <sub>DS</sub> = 0.8 Rated V <sub>DSS</sub> ,<br>I <sub>D</sub> = Rated I <sub>D</sub> , V <sub>GS</sub> = 10 V)     Qg       Gate-Drain Charge     See Figure 12     Qgd       SOURCE DRAIN DIODE CHARACTERISTICS*     Control of the set of the se | -                                       | 100  |  |
| Gate-Source Charge     ID     Rated ID, VGS     10 V)       Gate-Drain Charge     See Figure 12     Qgd       SOURCE DRAIN DIODE CHARACTERISTICS*   | 17 (Typ)                                | 35   | nC   |
| Gate-Drain Charge See Figure 12 Qgd SOURCE DRAIN DIODE CHARACTERISTICS*   | 8 (Түр)                                 | _  |  |
| SOURCE DRAIN DIODE CHARACTERISTICS*   | 9 (Тур)                                 | _  |  |
|   |   |  |  |
| Forward On-Voltage (Is = Rated In VSD   | 1.8 (Typ)                               | 2.5  | Vdc  |
| Forward Turn-On Time VGS = 0) ton   | Limite                                  | ed by stray inc  | ductance   |
| Reverse Recovery Time trr   | 320 (Typ)                               | -  | ns   |
| INTERNAL PACKAGE INDUCTANCE   |   |  |  |
| Internal Drain Inductance L <sub>d</sub><br>(Measured from the contact screw on tab to center of die)<br>(Measured from the drain lead 0.25" from package to center of die)   | 3.5 (Typ)                               | _  | nH   |
| Internal Source Inductance L <sub>S</sub><br>(Measured from the source lead 0.25" from package to source bond pad )   | 4.5 (Typ)                               | _  | 7  |