

## Silicon P-Channel Power MOSFET

### Description

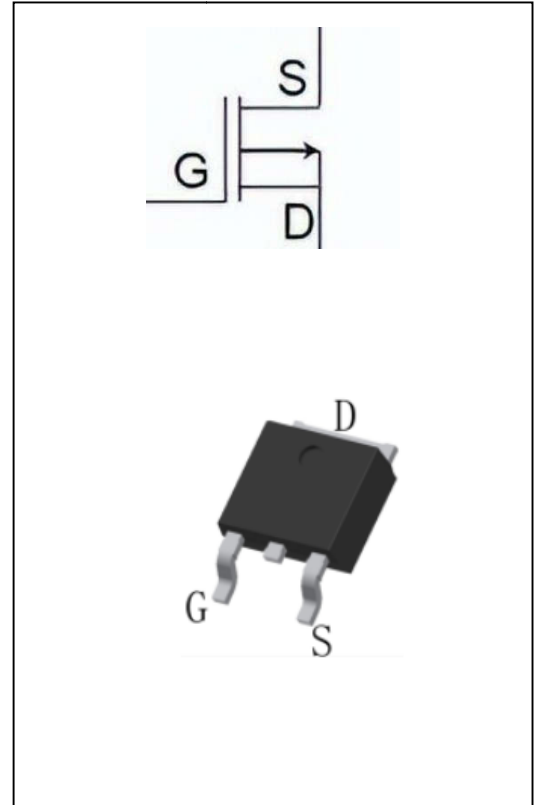
The MDT30P10D uses advanced technology and design to provide excellent  $R_{DS(ON)}$ . It can be used in a wide variety of applications.

### General Features

- $V_{DS}=-110V$ ,  $I_D=-30A$
- Low ON Resistance
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

### Application

- Power switching application
- Adapter and charger



### Electrical Characteristics @ $T_a=25^\circ C$ (unless otherwise specified)

#### a) Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain-to-Source Breakdown Voltage	-110	V
$I_D$	Drain Current (continuous) at $T_c=25^\circ C$	-30	A
$I_{DM}$	Drain Current (pulsed)	-120	A
$V_{GS}$	Gate to Source Voltage	+/-20	V
$P_{tot}$	Total Dissipation at $T_c=25^\circ C$	180	W
$T_j$	Max. Operating Junction Temperature	175	$^\circ C$
$E_{AS}$	Single Pulse Avalanche Energy	700	mJ

**b) Electrical Parameters:**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{DS}$	Drain-source Voltage	$V_{GS}=0V, I_D=-250\mu A$	-100			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=-10V, I_D=-15A$		26	32	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-2.0	-3.0	V
$I_{DSS}$	Drain to Source leakage Current	$V_{DS}=-110V, V_{GS}=0V$			-1.0	μA
$I_{GSS(F)}$	Gated Body Forward Leakage	$V_{GS}=+20V$			100	nA
$I_{GSS(R)}$	Gated Body Reverse Leakage	$V_{GS}=-20V$			-100	nA
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ $f=1.0MHz$		2315		pF
$C_{oss}$	Output Capacitance			190		pF
$C_{rss}$	Reverse Transfer Capacitance			11		pF

**c) Switching Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-20V, I_D=-16A,$ $R_G=10\Omega$		28		nS
$t_r$	Turn-on Rise Time			21		nS
$t_{d(off)}$	Turn-off Delay Time			62		nS
$t_f$	Turn-off Fall Time			32		nS
$Q_g$	Total Gate Charge	$V_{DS}=-20V$ $I_D=-16A$ $V_{GS}=-10V$		40		nC
$Q_{gs}$	Gate-Source Charge			9.2		nC
$Q_{gd}$	Gate-Drain Charge			14		nC

**d) Source-Drain Diode Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$I_{SD}$	S-D Current(Body Diode)				-35	A
$I_{SDM}$	Pulsed S-D Current(Body Diode)				-140	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{DS}=-35A$			-1.5	V
$t_{rr}$	Reverse Recovery Time	$T_J=25^\circ C, I_F=-35A$ $di/dt=100A/us$			555	nS
$Q_{rr}$	Reverse Recovery Charge				4550	μC
*Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%						

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	2.5	°C/W