

Silicon P-Channel Power MOSFET

Description

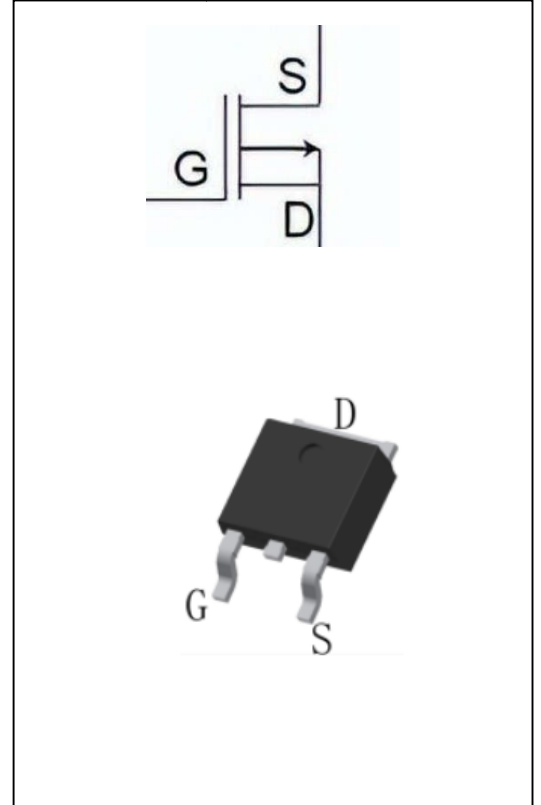
The MDT30P10D uses advanced technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

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	m Ω
$V_{GS(th)}$	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 $\leq 300\mu s$, Duty Cycle $\leq 2\%$						

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

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