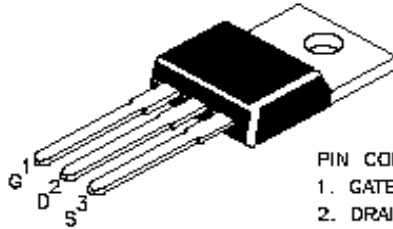


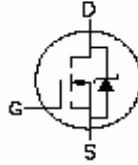
## N- CHANNEL TRENCH MOSFET TRANSISTOR

CDZ44

TO-220  
Plastic Package



**PIN CONFIGURATION**  
1. GATE  
2. DRAIN  
3. SOURCE



### Applications:-

Automotive, DC Motor Control, Class D Amplifier

### ABSOLUTE MAXIMUM RATINGS ( $T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	Maximum	UNITS
Drain to Source Voltage	$*V_{DSS}$	60	V
Continuous Drain Current	$I_D$	55	A
Power Dissipation	$P_D$	130	W
Derating Factor Above 25°C		0.87	W/°C
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Single Pulse Avalanche Energy, $L=10\text{ mH}, I_D=8\text{ A}$	$E_{AS}$	320	mJ
Peak Diode Recovery dv/dt	$***dv/dt$	3.0	V/ns
Maximum Temperature for Soldering Lead at 0.063 in (1.6mm) from Case for 10 seconds	$T_L$	300	°C
Package Body for 10 seconds	$T_{PKG}$	260	°C
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	- 55 to 175	°C

### THERMAL RESISTANCE

Junction to Case	Test Condition		
Drain Lead Soldered to water Cooled Heatsink , PD Adjusted for a Peak Junction Temperature of +175 °C		$R_{th(j-c)}$	1.15 °C/W
Junction to Ambient	Test Condition		
1 Cubic Foot Chamber, free air		$R_{th(j-a)}$	62 °C/W

### OFF CHARACTERISTICS ( $T_j=25^\circ\text{C}$ unless specified otherwise)

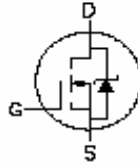
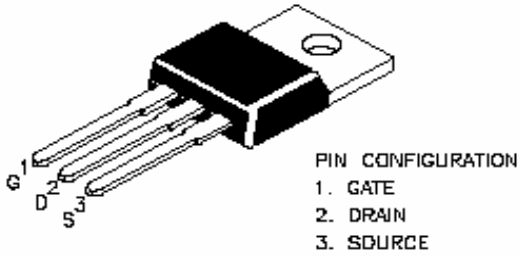
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Drain Source Breakdown Voltage	$V_{DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	60			V
Drain to Source Leakage Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0$			25	$\mu\text{A}$
		$V_{DS}=48V, V_{GS}=0, T_j=150^\circ\text{C}$			250	$\mu\text{A}$
Gate to Source Forward Leakage	$I_{GSS}$	$V_{DS}=0, V_{GS}=+20V$			100	nA
Gate to Source Reverse Leakage	$I_{GSS}$	$V_{DS}=0, V_{GS}=-20V$			- 100	nA

CDZ44 Rev 141209E

# N- CHANNEL TRENCH MOSFET TRANSISTOR

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## ON CHARACTERISTICS (T<sub>J</sub>=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Static Drain Source On Resistance	****R <sub>DS (ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =33A			18	mΩ
Gate Threshold Voltage	V <sub>GS (TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0		4.0	V
Forward Transconductance	****g <sub>fs</sub>	V <sub>DS</sub> =30V, I <sub>D</sub> =55A		65		S

## DYNAMIC CHARACTERISTICS Essentially independent of operating temperature

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		2077		pF
Output Capacitance	C <sub>OSS</sub>			222		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			115		pF
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =55A		33.6		nC
Gate to Source Charge	Q <sub>gs</sub>			9.1		nC
Gate to Drain ('Miller') Charge	Q <sub>gd</sub>			7.6		nC

## RESISTIVE SWITCHING CHARACTERISTICS Essentially independent of operating temperature

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Turn On Delay Time	t <sub>d (on)</sub>	V <sub>DD</sub> =30V, R <sub>G</sub> =9.1Ω, I <sub>D</sub> =27.5A, V <sub>GS</sub> =10V		24		ns
Rise Time	t <sub>rise</sub>			37		ns
Turn Off Delay Time	t <sub>d (off)</sub>			71		ns
Fall Time	t <sub>fall</sub>			65		ns

## SOURCE DRAIN DIODE CHARACTERISTICS (T<sub>c</sub>=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Continuous Source Current (Body Diode)	I <sub>S</sub>	Integral pn-diode in MOSFET			55	A
Maximum Pulsed Current (Body Diode)	I <sub>SM</sub>				220	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =55A, V <sub>GS</sub> = 0V			1.5	V
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> =0, V <sub>DD</sub> = -30V, I <sub>F</sub> =55A, di/dt=100 A/μs			92.5	ns
Reverse Recovery Charge	Q <sub>rr</sub>				163.5	nC

\* T<sub>J</sub>= +25°C to 175 °C

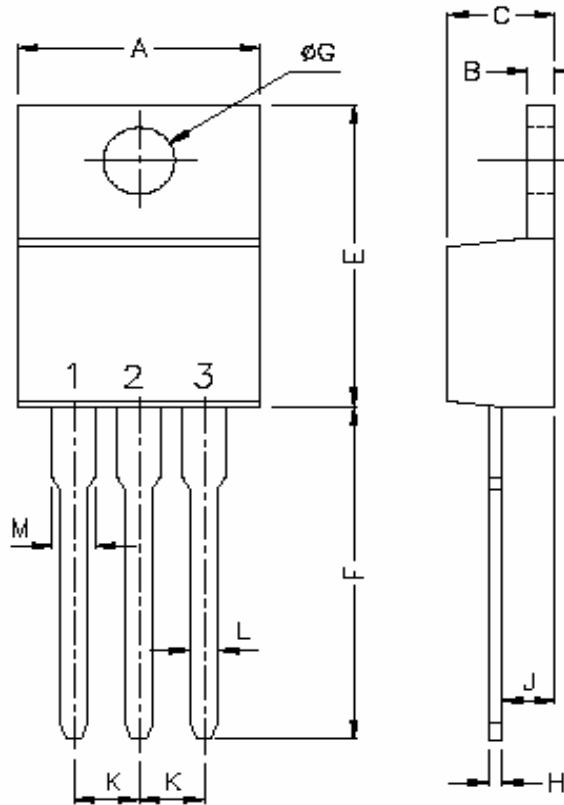
\*\* Repetitive rating: pulse width limited by maximum junction temperature

\*\*\*I<sub>SD</sub>= 55A di/dt ≤ 100 A/ms, V<sub>DD</sub> ≤ BV<sub>DSS</sub>, T<sub>J</sub>= +175°C

\*\*\*\*Pulse Width ≤ 380ms, Duty Cycle ≤ 2%

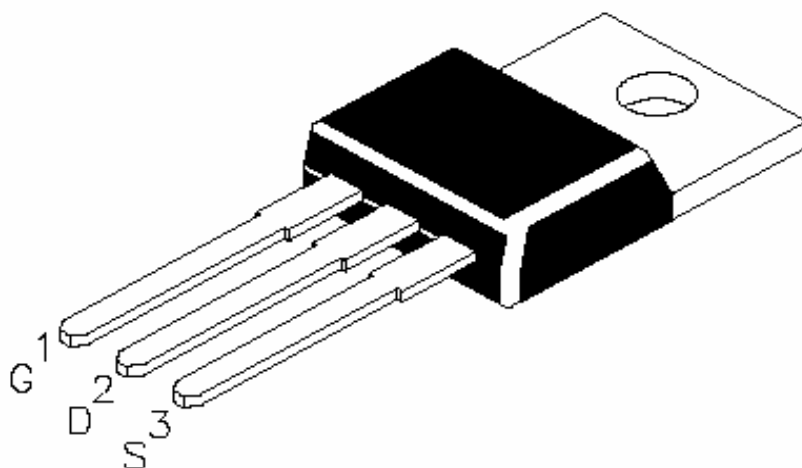
CDZ44 Rev 141209E

PACKAGE TO-220



DIM	MIN	TYP.	MAX
A			10.7
B			1.4
C			4.8
D			6.9
E			16.5
F	12.5		
G		3.81	
H			0.4
J		2.67	
K		2.51	
L			1.2
M		1.27	

ALL DIMENSIONS ARE IN mm



PIN CONFIGURATION

1. GATE
2. DRAIN
3. SOURCE

**Component Disposal Instructions**

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

**Disclaimer**

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Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 4141 1112 Fax + 91-11-2579 5290, 4141 1119

email@cdil.com www.cdilsemi.com