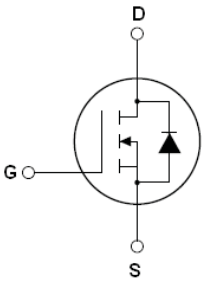
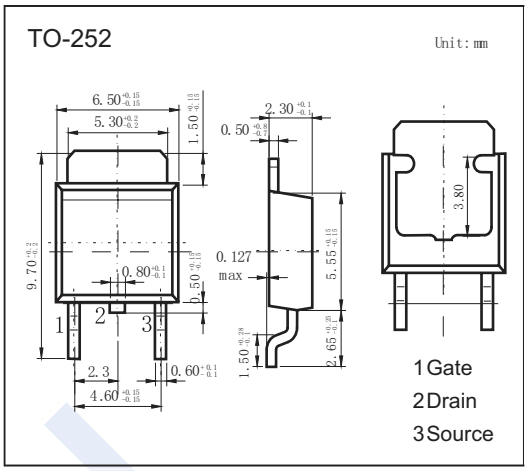
N-Channel Trench Power MOSFET

NDT90N04

■ Features

- V_{DS} = 40V; I_D = 120A
- $R_{DS(ON)}$ < 3.5mΩ (V_{GS} = 10V)
- Ultra Low On-Resistance
- High UIS and UIS 100% Test





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	Tc=25℃	I_D	120	A
	Tc=100℃		85	
Pulsed Drain Current (Note 1)			375	
Power Dissipation	Tc=25℃	P_D	141	W
Single Pulse Avalanche Energy (Note 2)		E_{AS}	784	mJ
Thermal Resistance.Junction- to-Case		R_{thJC}	1.35	℃/W
Junction Temperature		T_J	175	℃
Storage Temperature Range		T_{stg}	-55 to +175	

Notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. E_{AS} condition: T_J=25℃, V_{DD}=30V, V_G=10V, R_G=25Ω

N-Channel Trench Power MOSFET

NDT90N04

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current (Tc=25℃)	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
Zero Gate Voltage Drain Current (Tc=100℃)	I_{DSS}	V_{DS}=40V, V_{GS}=0V			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=12A			4.5	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=15A	20			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz		5460		pF
Output Capacitance	C_{oss}			985		
Reverse Transfer Capacitance	C_{rss}			292		
Total Gate Charge	Q_g	V_{DS}=30V, I_D=15A, V_{GS}=10V		102		nC
Gate Source Charge	Q_{gs}			20		nC
Gate Drain Charge	Q_{gd}			49		nC
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=30V,R_L=2.5Ω VGS=10V, R_G=3Ω		24		ns
Turn-On Rise Time	t_r			32		
Turn-Off DelayTime	$t_{d(off)}$			69		
Turn-Off Fall Time	t_f			31		
Body Diode Reverse Recovery Time (Note1)	t_{rr}	I_F= 15A, dI/dt= 100A/μs		28		
Body Diode Reverse Recovery Charge (Note1)	Q_{rr}			39		nC
Maximum Body-Diode Continuous Current	I_S			110		A
Maximum Body-Diode Pulsed Current	I_{SM}			352		A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V			1.2	V
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Notes 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, Starting T_J = 25℃

■ Marking

Marking	CSD40N35