

N - CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTOR

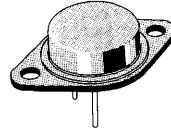
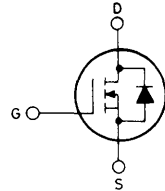
TYPE	V _{DSS}	R _{DS(on)}	I _D
BUZ45A	500 V	0.8 Ω	8.3 A

- HIGH VOLTAGE - FOR OFF-LINE SMPS
- ULTRA FAST SWITCHING FOR OPERATION AT < 100KHz
- EASY DRIVE - FOR REDUCED COST AND SIZE

INDUSTRIAL APPLICATIONS:

- SWITCH MODE POWER SUPPLIES
- MOTOR CONTROLS

N - channel enhancement mode POWER MOS field effect transistor. Easy drive and very fast switching times make this POWER MOS transistor ideal for high speed switching applications. Typical applications include switching power supplies, uninterruptable power supplies and motor speed control.


TO-3
INTERNAL SCHEMATIC DIAGRAM

ABSOLUTE MAXIMUM RATINGS

V _{DS}	Drain-source voltage (V _{GS} = 0)	500	V
V _{DGR}	Drain-gate voltage (R _{GS} = 20 KΩ)	500	V
V _{GS}	Gate-source voltage	± 20	V
I _D	Drain current (continuous) T _c = 25°C	8.3	A
I _{DM}	Drain current (pulsed)	33	A
P _{tot}	Total dissipation at T _c < 25°C	125	W
T _{stg}	Storage temperature	-55 to 150	°C
T _j	Max. operating junction temperature	150	°C
	DIN humidity category (DIN 40040)	C	
	IEC climatic category (DIN IEC 68-1)	55/150/56	

THERMAL DATA

$R_{thj - case}$	Thermal resistance junction-case	max	1.0	°C/W
$R_{thj - amb}$	Thermal resistance junction-ambient	max	35	°C/W

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

Parameters	Test Conditions	Min.	Typ.	Max.	Unit
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OFF

$V_{(BR) DSS}$	Drain-source breakdown voltage	$I_D = 250 \mu\text{A}$	$V_{GS} = 0$	500		V
I_{DSS}	Zero gate voltage drain current ($V_{GS} = 0$)	$V_{DS} = \text{Max Rating}$	$T_j = 125^\circ\text{C}$		250 1000	μA μA
I_{GSS}	Gate-body leakage current ($V_{DS} = 0$)	$V_{GS} = \pm 20 \text{ V}$			± 100	nA

ON

$V_{GS (th)}$	Gate threshold voltage	$V_{DS} = V_{GS}$	$I_D = 1 \text{ mA}$	2.1		4	V
$R_{DS (on)}$	Static drain-source on resistance	$V_{GS} = 10 \text{ V}$	$I_D = 5 \text{ A}$			0.8	Ω

DYNAMIC

g_{fs}	Forward transconductance	$V_{DS} = 25 \text{ V}$	$I_D = 5 \text{ A}$	2.7			mho
C_{iss}	Input capacitance	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$	$f = 1 \text{ MHz}$			4900	pF
C_{oss}	Output capacitance					400	pF
C_{rss}	Reverse transfer capacitance					170	pF

SWITCHING

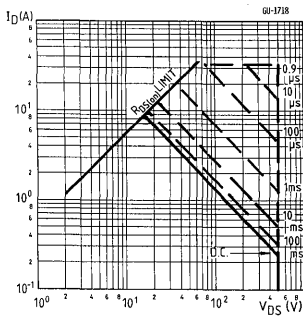
$t_{d (on)}$	Turn-on time	$V_{DD} = 30 \text{ V}$	$I_D = 2.8 \text{ A}$			75	ns
t_r	Rise time	$R_{GS} = 50 \Omega$	$V_{GS} = 10 \text{ V}$			120	ns
$t_{d (off)}$	Turn-off delay time					430	ns
t_f	Fall time					140	ns

ELECTRICAL CHARACTERISTICS (Continued)

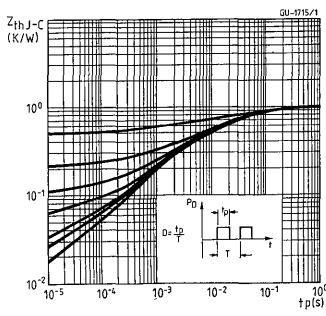
Parameters	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD} I_{SDM}	Source-drain current Source-drain current (pulsed)	$T_c = 25^\circ\text{C}$		8.3 33	A A
V_{SD}	Forward on voltage	$I_{SD} = 16.6\text{ A}$	$V_{GS} = 0$	1.6	V
t_{rr}	Reverse recovery time			1200	ns
Q_{rr}	Reverse recovered charge	$I_{SD} = 8.3\text{ A}$	$di/dt = 100\text{A}/\mu\text{s}$	12	μC

SOURCE DRAIN DIODE

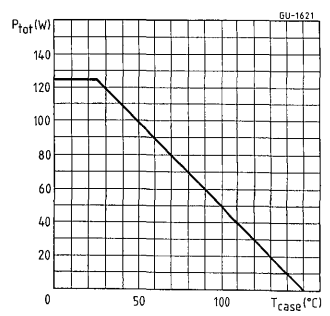
Safe operating areas



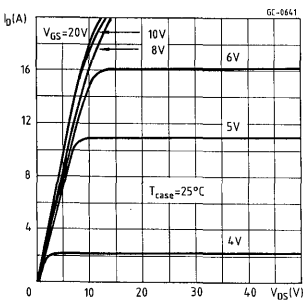
Thermal impedance



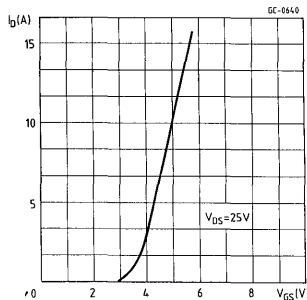
Derating curve



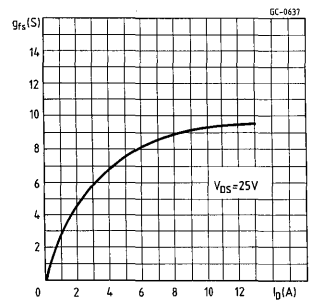
Output characteristics



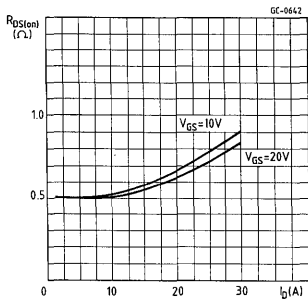
Transfer characteristics



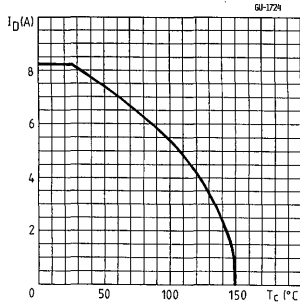
Transconductance



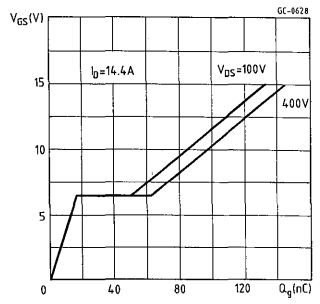
Static drain-source on resistance



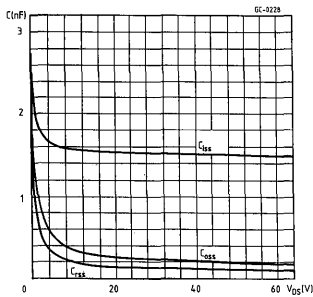
Maximum drain current vs temperature



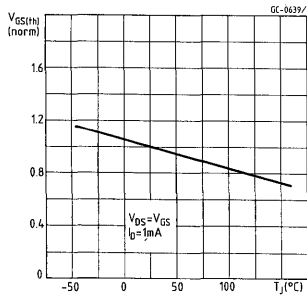
Gate charge vs gate-source voltage



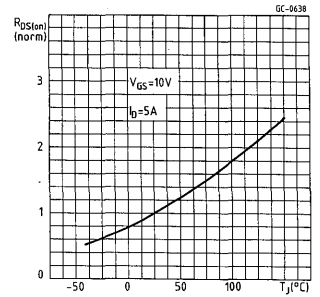
Capacitance variation



Gate threshold voltage vs temperature



Drain-source on resistance vs temperature



Source-drain diode forward characteristics

