SGS-THOMSON
MICROELECTRONICS

BUZ354

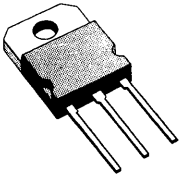
N - CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTOR

TYPE	V_{DSS}	$R_{DS(on)}$	I_D
BUZ354	500 V	0.8 Ω	8 A

- HIGH SPEED SWITCHING
- HIGH VOLTAGE - 500V FOR OFF-LINE SMPS
- HIGH CURRENT - 8A FOR UP TO 200W SMPS
- ULTRA FAST SWITCHING - FOR OPERATION AT < 100KHz
- EASY DRIVE - FOR REDUCED COST AND SIZE

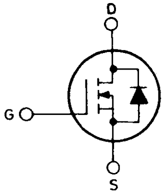
INDUSTRIAL APPLICATIONS:
- SWITCHING POWER SUPPLIES
- MOTOR CONTROLS

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 uses include switching mode power supplies, uninterruptible power supplies and motor speed control.



TO-218

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	A
I_{DM}	Drain current (pulsed)	32	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)	E	
	IEC climatic category (DIN IEC 68-1)	55/150/56	

THERMAL DATA

$R_{thj\text{ - }case}$	Thermal resistance junction-case	max	1.0	°C/W
$R_{thj\text{ - }amb}$	Thermal resistance junction-ambient	max	45	°C/W

ELECTRICAL CHARACTERISTICS ($T_j = 25°C$ unless otherwise specified)

Parameters		Test Conditions		Min.	Typ.	Max.	Unit
OFF							
$V_{(BR)\ DSS}$	Drain-source breakdown voltage	$I_D = 250\ \mu A$	$V_{GS} = 0$	500			V
I_{DSS}	Zero gate voltage drain current ($V_{GS} = 0$)	$V_{DS} =$ Max Rating $V_{DS} =$ Max Rating	 $T_j = 125°C$			250 1000	μA μA
I_{GSS}	Gate-body leakage current ($V_{DS} = 0$)	$V_{GS} = \pm 20\ V$				±100	nA
ON							
$V_{GS\ (th)}$	Gate threshold voltage	$V_{DS} = V_{GS}$	$I_D = 1\ mA$	2.1		4	V
$R_{DS\ (on)}$	Static drain-source on resistance	$V_{GS} = 10\ V$	$I_D = 5.5\ A$			0.8	Ω
DYNAMIC							
g_{fs}	Forward transconductance	$V_{DS} = 25\ V$	$I_D = 5.5\ A$	2.7			mho
C_{iss} C_{oss} C_{rss}	Input capacitance Output capacitance Reverse transfer capacitance	$V_{DS} = 25\ V$ $V_{GS} = 0$	$f = 1\ MHz$			4900 400 170	pF pF pF
SWITCHING							
$t_{d\ (on)}$ t_r $t_{d\ (off)}$ t_f	Turn-on time Rise time Turn-off delay time Fall time	$V_{DD} = 30\ V$ $R_{GS} = 50\ \Omega$	$I_D = 2.8\ A$ $V_{GS} = 10\ V$			75 120 430 140	ns ns ns ns

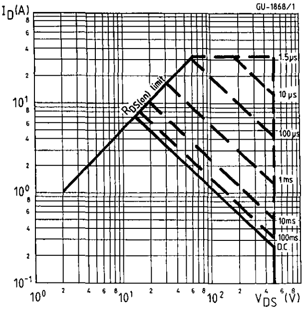
ELECTRICAL CHARACTERISTICS (Continued)

Parameters	Test Conditions	Min.	Typ.	Max.	Unit

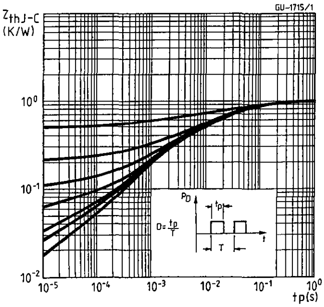
SOURCE DRAIN DIODE

I_{SD} Source-drain current I_{SDM} Source-drain current (pulsed)	$T_c = 25°C$			8 32	A A
V_{SD} Forward on voltage	$I_{SD} = 16$ A $V_{GS} = 0$			1.6	V
t_{rr} Reverse recovery time Q_{rr} Reverse recovered charge	$I_{SD} = 8$ A di/dt = 100A/μs		1200 12		ns μC

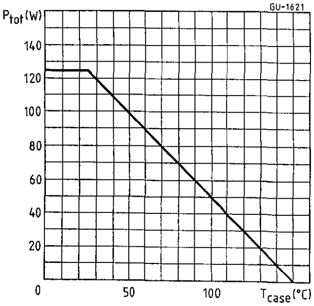
Safe operating areas



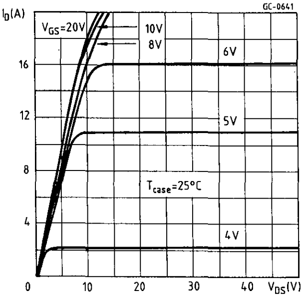
Thermal impedance



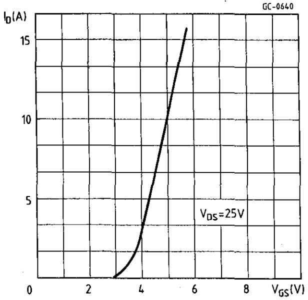
Derating curve



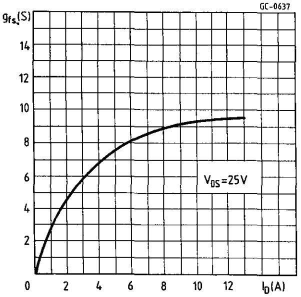
Output characteristics



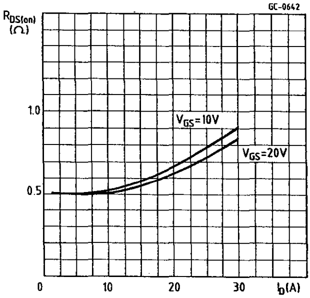
Transfer characteristics



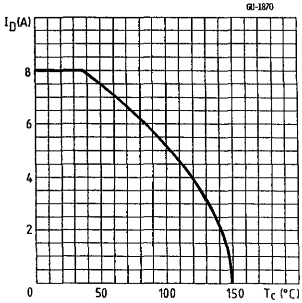
Transconductance



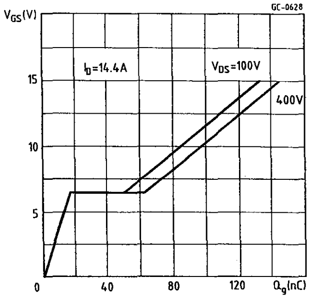
Static drain-source on resistance



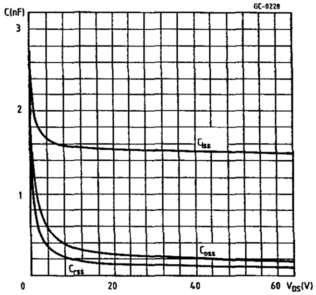
Maximum drain current vs temperature



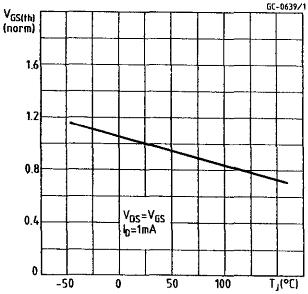
Gate charge vs gate-source voltage



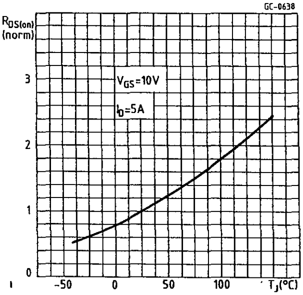
Capacitance variation



Gate threshold voltage vs temperature



Drain-source on resistance vs temperature



Source-drain diode forward characteristics