POWER-MOS FET
FIELD EFFECT POWER TRANSISTOR

D80AK2,L2

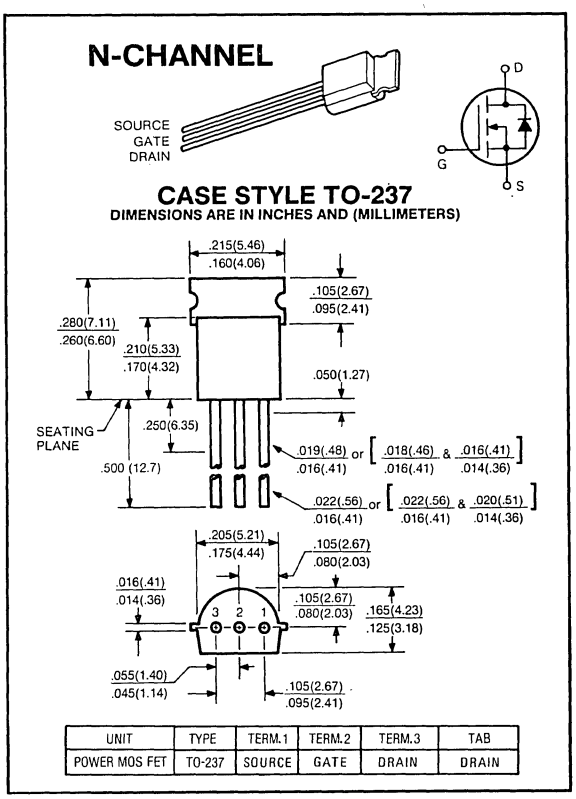
0.45 AMPERES
60, 100 VOLTS
$R_{DS(ON)}$ = 2.4 Ω

This series of N-Channel Enhancement-mode Power MOSFETs utilizes GE's advanced Power DMOS technology to achieve low on-resistance with excellent device ruggedness and reliability.

This design has been optimized to give superior performance in most switching applications including: switching power supplies, inverters, converters and solenoid/relay drivers. Also, the extended safe operating area with good linear transfer characteristics makes it well suited for many linear applications such as audio amplifiers and servo motors.

Features

- Polysilicon gate — Improved stability and reliability
- No secondary breakdown — Excellent ruggedness
- Ultra-fast switching — Independent of temperature
- Voltage controlled — High transconductance
- Low input capacitance — Reduced drive requirement
- Excellent thermal stability — Ease of paralleling



UNIT	TYPE	TERM.1	TERM.2	TERM.3	TAB
POWER MOS FET	TO-237	SOURCE	GATE	DRAIN	DRAIN

maximum ratings (T_A = 25° C) (unless otherwise specified)

RATING	SYMBOL	D80AK2	D80AL2	UNIT
Drain-Source Voltage	V_{DSS}	60	100	Volts
Drain-Gate Voltage, R_{GS} = 1MΩ	V_{DGR}	60	100	Volts
Continuous Drain Current @ T_A = 25° C(1) @ T_C = 100° C(2)	I_D	0.45 0.60	0.45 0.60	A A
Pulsed Drain Current(3)	I_{DM}	4.0	4.0	A
Gate-Source Voltage	V_{GS}	±20	±20	Volts
Total Power Dissipation @ T_A = 25° C(1) Derate Above 25° C	P_D	1.0 8	1.0 8	Watts mW/° C
Total Power Dissipation @ T_C = 100° C(2) Derate Above 100° C	P_D	2.0 40	2.0 40	Watts mW/° C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	° C

thermal characteristics

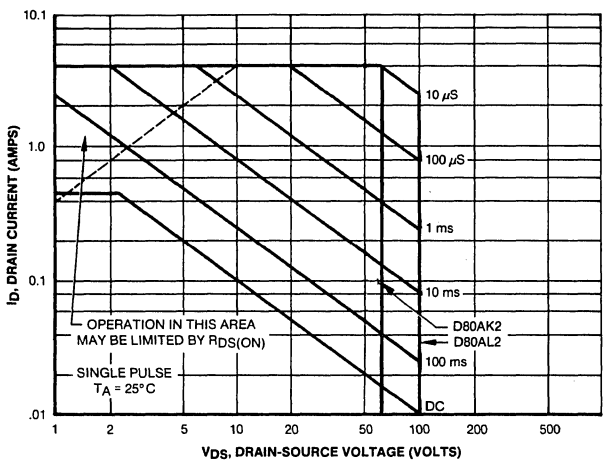
Thermal Resistance, Junction to Case	$R_{\theta JC}$	25	25	° C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	125	° C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	300	300	° C

(1) Device Lead Mounted in Free Air, No Heatsink. (2) Device Tab Soldered to Heatsink. (3) Repetitive Rating: Pulse Width Limited by Max. Junction Temperature

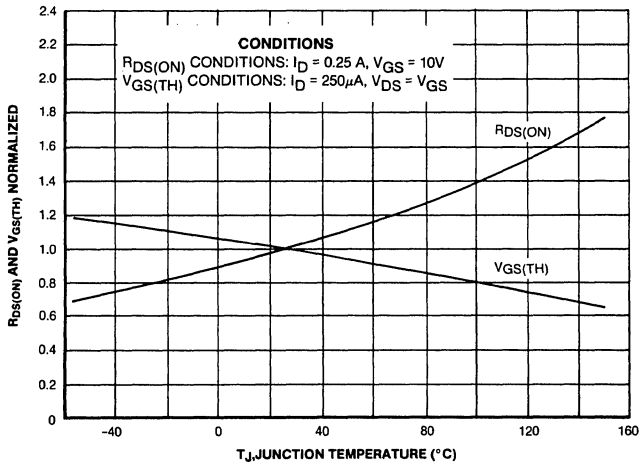
electrical characteristics (T_A = 25° C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics						
Drain-Source Breakdown Voltage (V_{GS} = 0V, I_D = 250 μA)	D80AK2 D80AL2	BV_{DSS}	60 100	— —	— —	Volts
Zero Gate Voltage Drain Current (V_{DS} = Max Rating, V_{GS} = 0V, T_A = 25° C) (V_{DS} = Max Rating, × 0.8, V_{GS} = 0V, T_A = 125° C)		I_{DSS}	— —	— —	250 1000	μA
Gate-Source Leakage Current (V_{GS} = ±20V)		I_{GSS}	—	—	±500	nA
on characteristics*						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 250 μA)	T_A = 25° C	$V_{GS(TH)}$	2.0	—	4.0	Volts
Drain-Source On-State Voltage (V_{GS} = 10V)	I_D = 0.25A I_D = 0.45A I_D = 0.25A, T_A = 125° C	$V_{DS(ON)}$	— — —	0.55 1.05 0.90	0.60 — —	Volts
Static Drain-Source On-State Resistance (V_{GS} = 10V, I_D = 0.25A)		$R_{DS(ON)}$	—	2.2	2.4	Ohms
Forward Transconductance (V_{DS} = 10V, I_D = 0.25A)		g_{fs}	—	0.2	—	mhos
dynamic characteristics						
Input Capacitance	V_{GS} = 0V	C_{iss}	—	36	70	pF
Output Capacitance	V_{DS} = 25V	C_{oss}	—	20	30	pF
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	7	10	pF
switching characteristics*						
Turn-on Delay Time	V_{DS} = 30V	$t_{d(on)}$	—	6	—	ns
Rise Time	I_D = 0.25A, V_{GS} = 15V	t_r	—	6	—	ns
Turn-off Delay Time	R_{GEN} = 50 Ω, R_{GS} = 12.5 Ω	$t_{d(off)}$	—	12	—	ns
Fall Time	($R_{GS\ (EQUIV.)}$ = 10Ω)	t_f	—	7	—	ns
source-drain diode ratings and characteristics*						
Continuous Source Current		I_S	—	—	0.45	A
Pulsed Source Current		I_{SM}	—	—	4.0	A
Diode Forward Voltage (T_A = 25° C, V_{GS} = 0V, I_S = 0.45A)		V_{SD}	—	0.9	1.4	Volts
Reverse Recovery Time (I_S = 0.45A, dI_S/dt = 100A/μs, V_{DS} = 45 V Max., T_A = 125° C)		t_{rr}	—	65	—	ns

*Pulse Test: Pulse width ≤ 300 μs, duty cycle ≤ 2%



MAXIMUM SAFE OPERATING AREA



TYPICAL NORMALIZED $R_{DS(ON)}$ AND $V_{GS(TH)}$ VS. TEMP.