N-Channel Enhancement-Mode Power MOSFET (30V, 80A)

PRODUCT SUMMARY

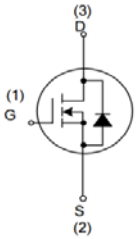
V_{DSS}	I_D	$R_{DS(on)}$ (mΩ)Typ
30V	80A	4.5@ VGS = 10V, ID=40A
		5.5@ VGS = 4.5V, ID=20A

Features

- Super high dense cell trench design for low RDS(on)
- Rugged and reliable
- TO-252-2L package
- Lead（Pb）-free and halogen-free

ET3080 Pin Assignment & Symbol

3-Lead Plastic TO-252-2L
Pin 1: Gate Pin 2: Source Pin3: Drain



Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous)	80	A
	Drain Current (Continuous)(T_C=100°C)	50	A
I_{DM}	Drain Current (Pulsed) [a]	320	A
EAS	Single pulse avalanche energy	300	mJ
P_D	Total Power Dissipation @T_A=25°C	110	W
	Total Power Dissipation @T_A=75°C	85	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted)[b]	0.48	°C/

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

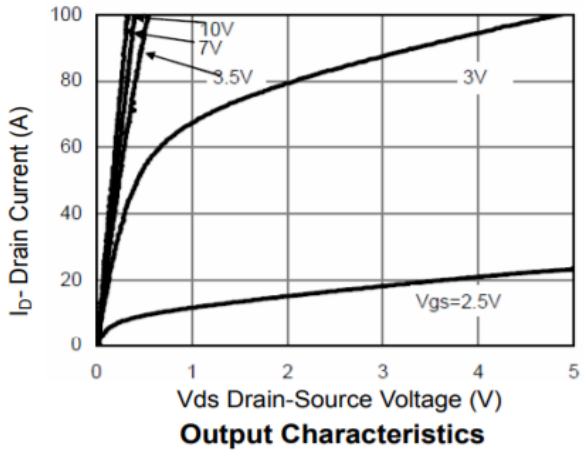
b: 1-in^2 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

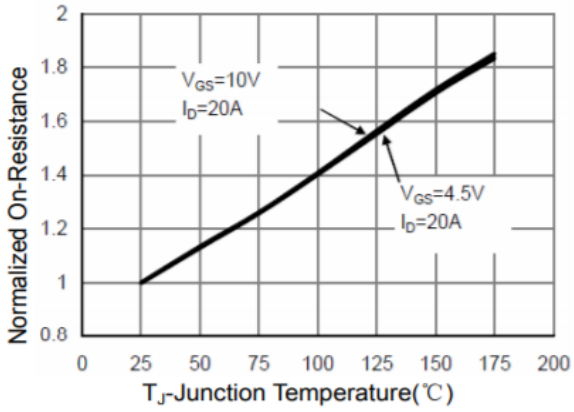
Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	1	1.6	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	-	4.5	6	mΩ
		V_{GS}=4.5V, I_D=15A		5.5	7.5	
g_{FS}	Forward Transconductance	V_{DS}=15V, I_D=20A	50			S
I_s	Maximum Body-Diode Continuous Current				80	A
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	1400	-	PF
C_{oss}	Output Capacitance		-	205	-	
C_{rss}	Reverse Transfer Capacitance		-	170	-	
Rg	Gate resistance	VDS=15V, VGS=0V, f=1MHz		2.2		Ω
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=15V, I_D=20A, V_{GS}=10V	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	5	-	
Q_{gd}	Gate-Drain Charge		-	6.5	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V, R_L=1.25Ω V_{GS}=4.5V, R_G=3Ω	-	9	-	nS
t_r	Turn-on Rise Time		-	8	-	
$t_{d(off)}$	Turn-off Delay Time		-	28	-	
t_f	Turn-off Fall Time		-	5	-	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=-1A	-	0.7	1	V

Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

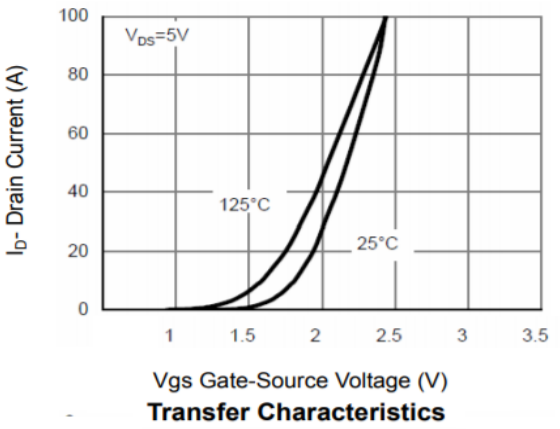
Typical Characteristics Curves (Ta=25°C, unless otherwise note)



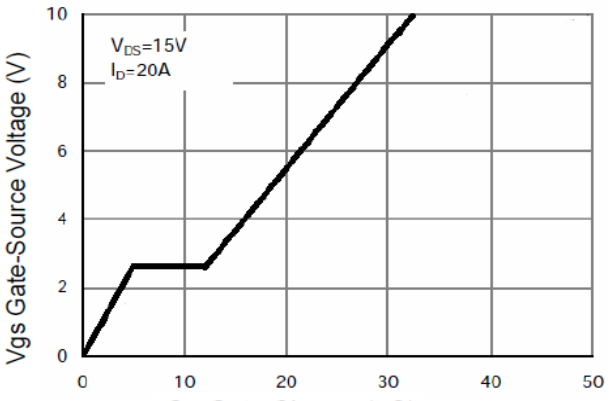
Output Characteristics



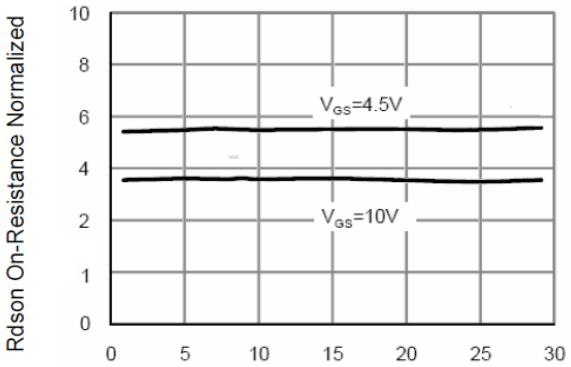
Rdson-Junction Temperature



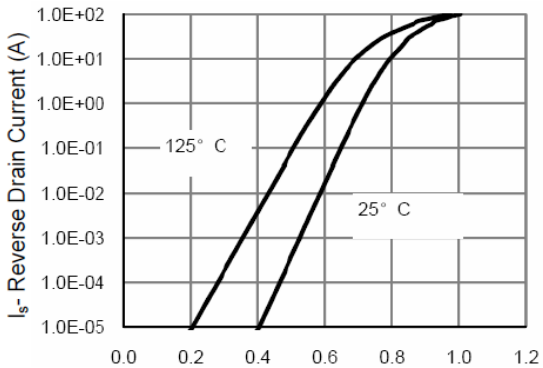
Transfer Characteristics



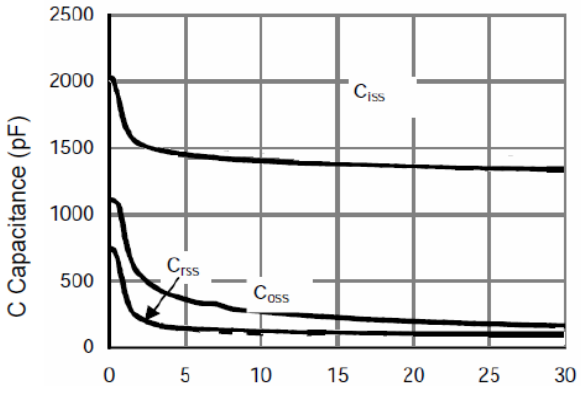
Gate Charge



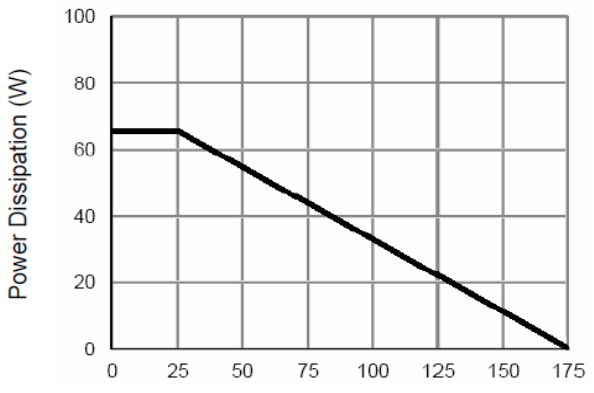
Rdson- Drain Current



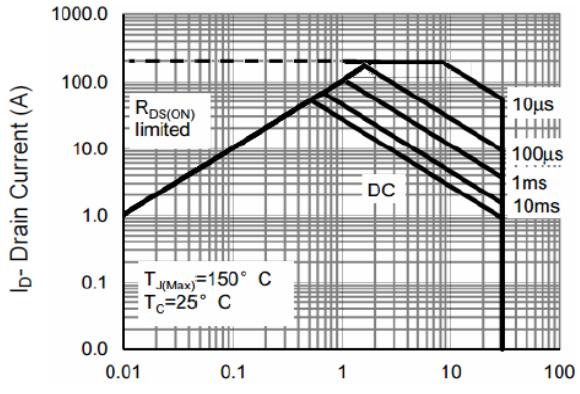
Source- Drain Diode Forward



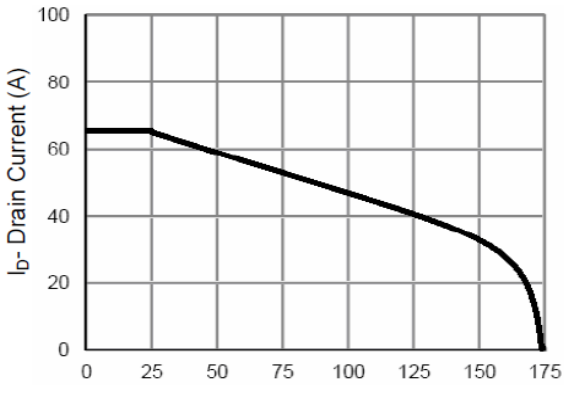
Capacitance vs Vds



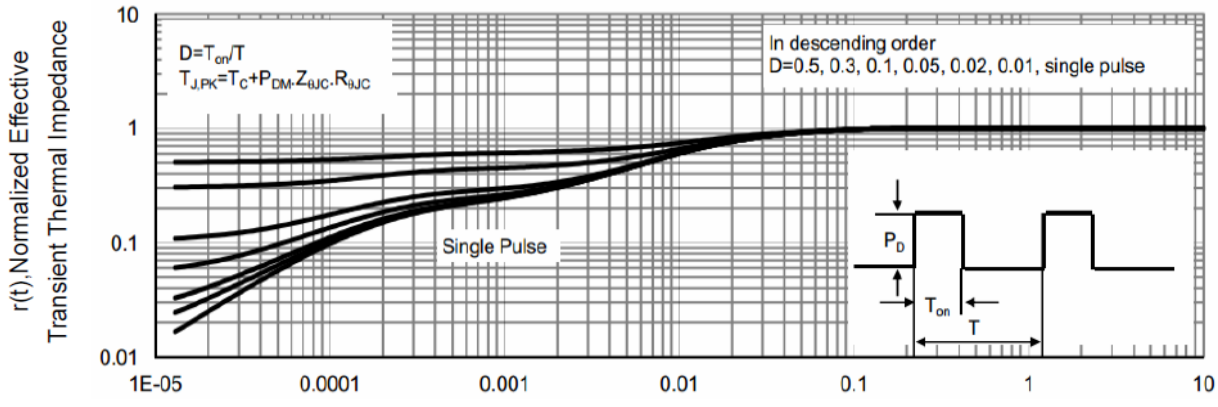
Power De-rating



Safe Operation Area

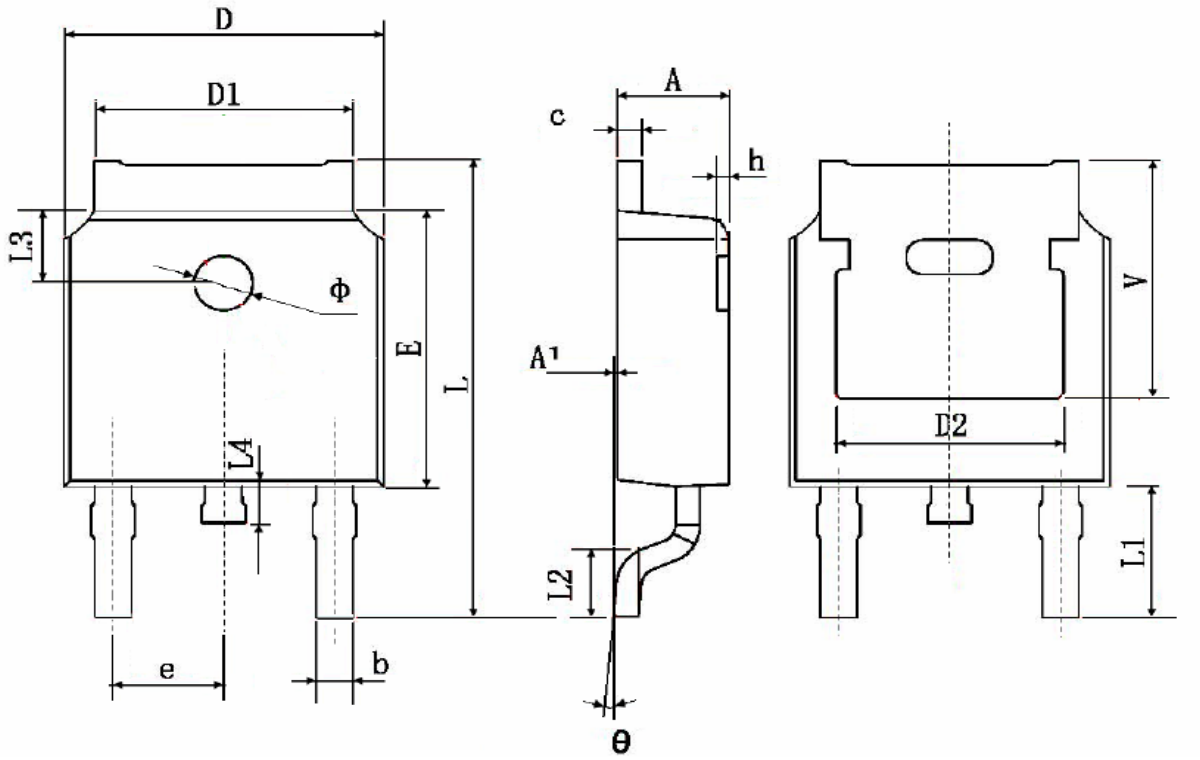


ID Current- Junction Temperature



Normalized Maximum Transient Thermal Impedance

TO-252-2L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	