Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	17mΩ@10V	50A

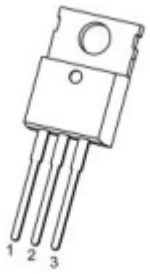
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

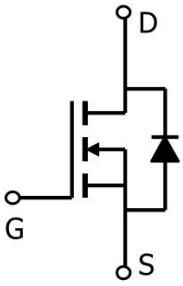
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

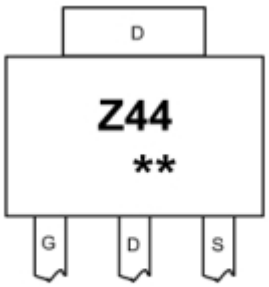


TO-220-3L-C(G:1 D:2 S:3)

Circuit diagram



Marking



Z44 =Device Code
** =Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±25	V
Continuous Drain Current[1](T_C=25℃)	I_D	50	A
Pulsed Drain Current[2]	I_{DM}	120	A
Single Pulse Avalanche Energy[3]	E_{AS}	65	mJ
Total Power Dissipation(T_C=25℃)	P_D	94	W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	1.33	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Electrical characteristics

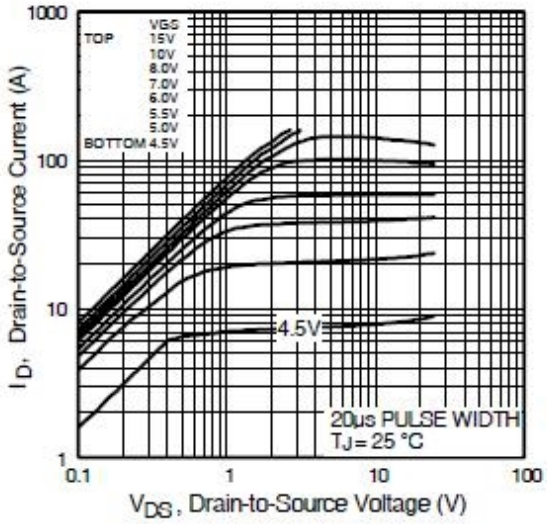
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Bvdss Temperature Coefficient	ΔBVDSS/ΔTJ	I_D=1mA, Reference25℃		0.058		V/℃
Zero gate voltage drain current	I_{DSS}	V_{DS} =48V, V_{GS} = 0V, T_J=25℃			25	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±25V, V_{DS} = 0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2	3	4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =25A		17	22	mΩ
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		1476		pF
Output capacitance	C_{oss}			354		
Reverse transfer capacitance	C_{rss}			90		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} =44V, V_{GS}=10V, I_D=25A		36		nC
Gate-Source Charge	Q_{gs}			5		
Gate-Drain Charge	Q_{gd}			9		
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=28V, V_{GS}=10V, R_G=12Ω, I_D=25A		12		nS
Turn-on Rise Time	T_r			60		
Turn-Off Delay Time	$T_{d(off)}$			44		
Turn-Off Fall Time	t_f			45		

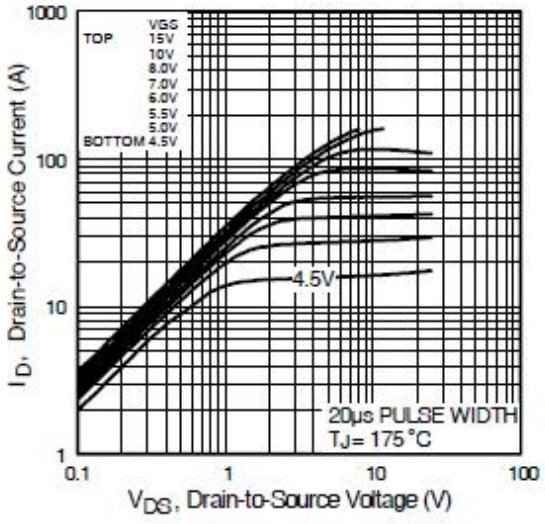
Notes:

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is R_G =25Ω ,L=34mH

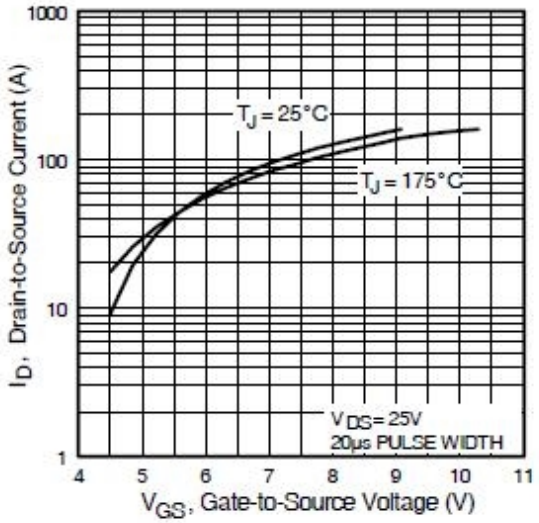
Typical Characteristics



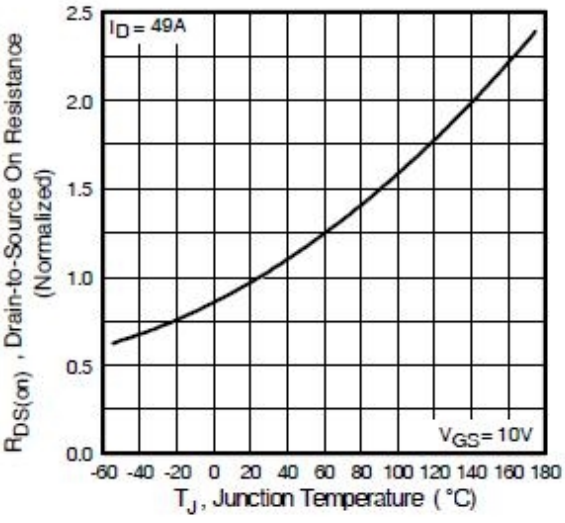
Typical Output Characteristics



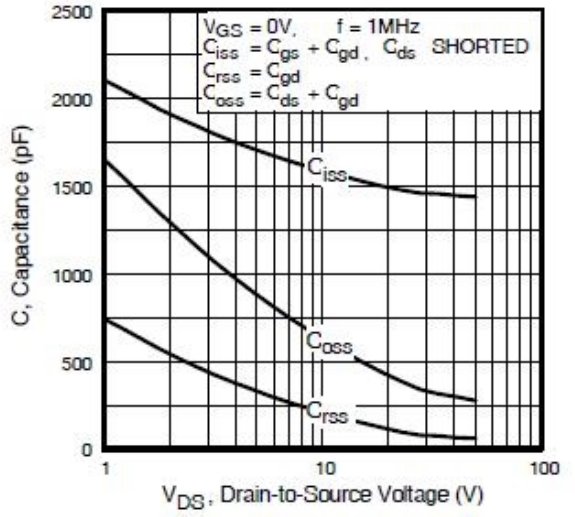
Typical Output Characteristics



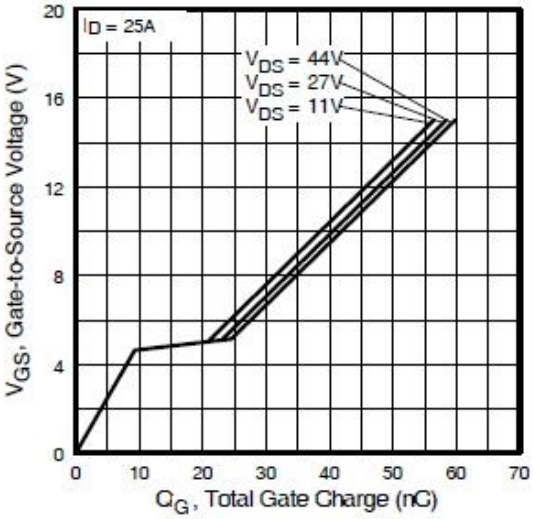
Typical Transfer Characteristics



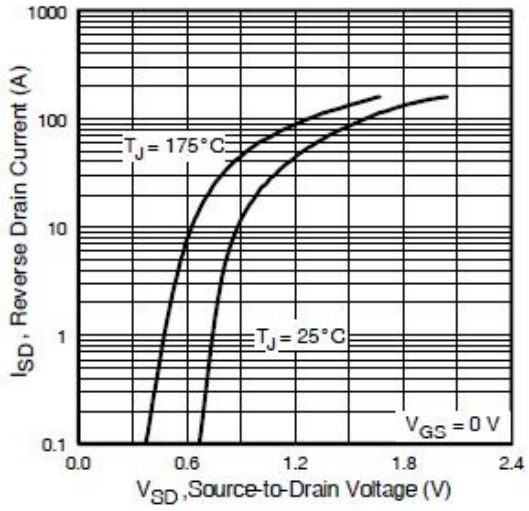
Normalized On-Resistance Vs. Temperature



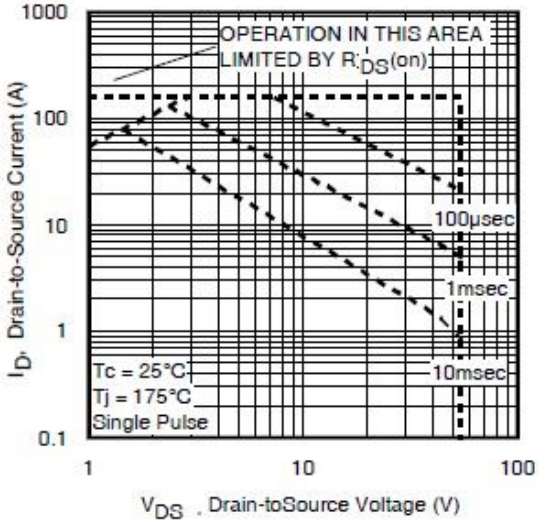
Typical Capacitance Vs. Drain-to-Source Voltage



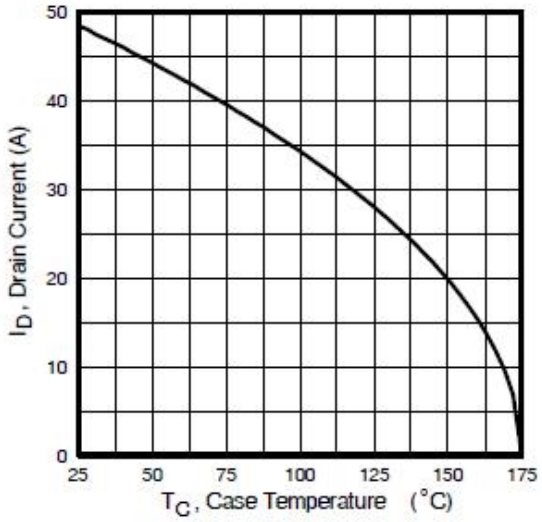
Typical Gate Charge Vs. Gate-to-Source Voltage



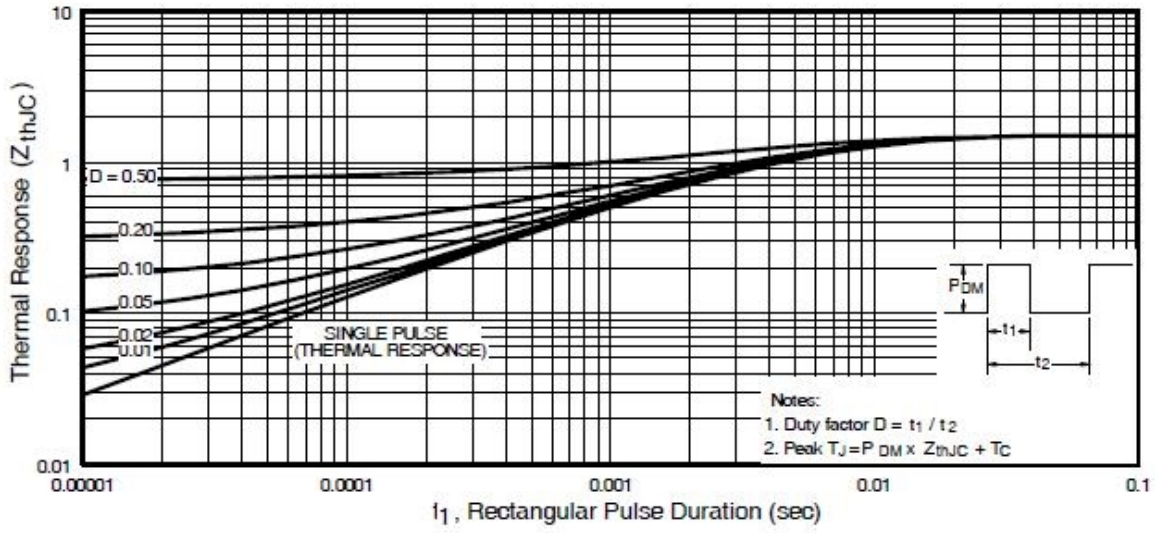
Typical Source-Drain Diode Forward Voltage



Maximum Safe Operating Area

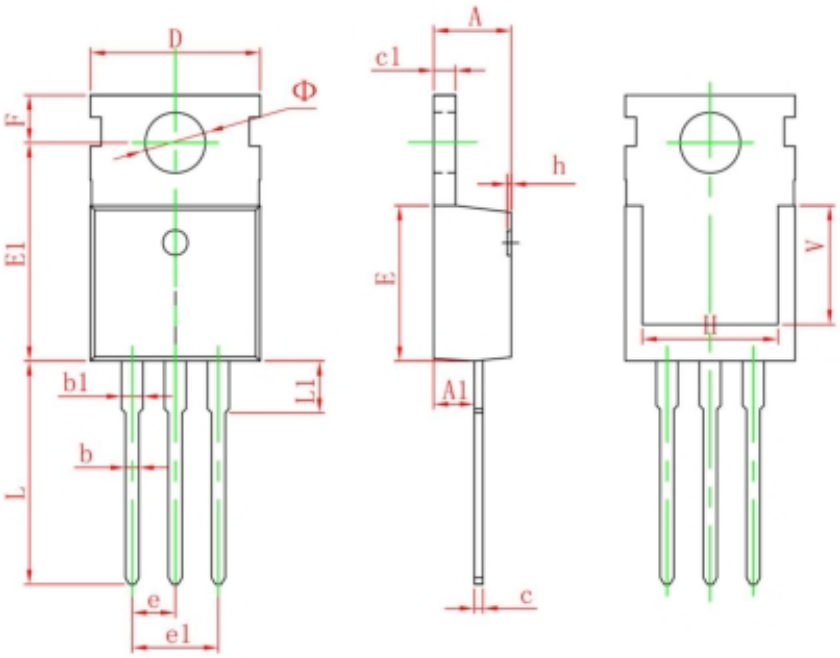


Maximum Drain Current Vs. Case Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150