Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
800V	0.65Ω@10V	12A

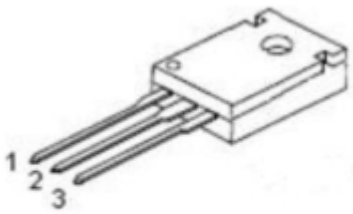
Feature

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

Applications

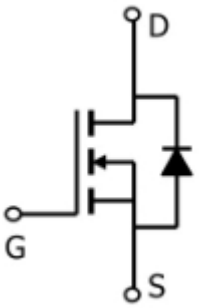
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

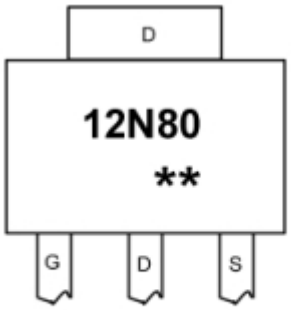


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



12N80 =Device Code
** =Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous(T_C = 25℃)	I_D	12	W
Pulsed Drain Current[2]	I_{DM}	48	A
Single Pulse Avalanche Energy[3]	E_{AS}	891	mJ
Total Power Dissipation (T_C = 25℃)	P_D	300	W
Thermal Resistance Junction- Case[1]	$R_{\theta JC}$	0.42	℃/ W
Storage Temperature Range	T_{STG}	-55~ +150	℃
Operating Junction Temperature Range	$T_{J,}$	-55~ +150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

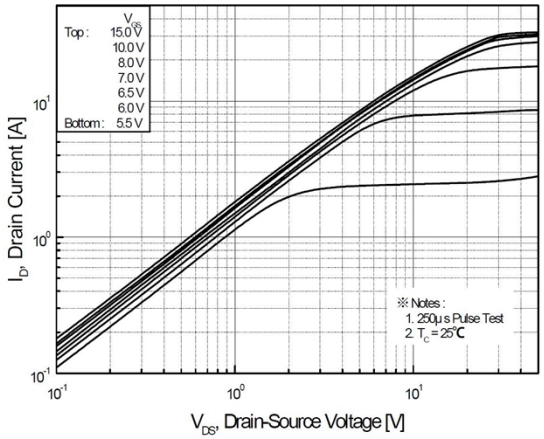
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D =250μA	800			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =720V,V_{GS} = 0V , T_J=25℃			10	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	3	4	5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =6A		0.65	0.81	Ω
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz		2732		pF
Output Capacitance	C_{oss}			278		
Reverse Transfer Capacitance	C_{rss}			28		
Switching Characteristics						
Total Gate Charge(4.5V)	Q_g	V_{DS}=640V, V_{GS}=10V, I_D=12A		67		nC
Gate-Source Charge	Q_{gS}			16		
Gate-Drain Charge	Q_{gd}			31		
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=400V, V_{GS}=10V, R_G=25Ω, I_D=12A		61		nS
Rise Time	T_r			149		
Turn-Off Delay Time	$T_{d(off)}$			160		
Fall Time	T_f			113		

Note :

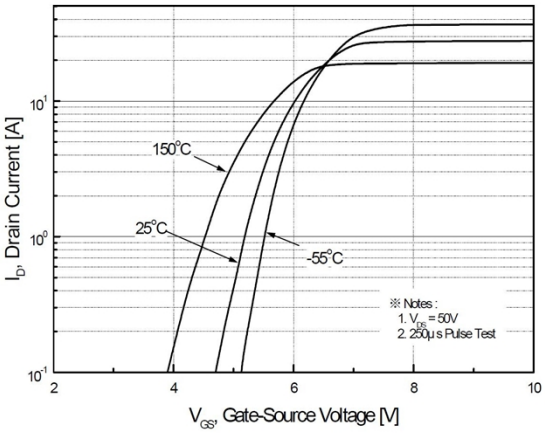
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is R_G =25Ω ,L=13mH

Typical Characteristics

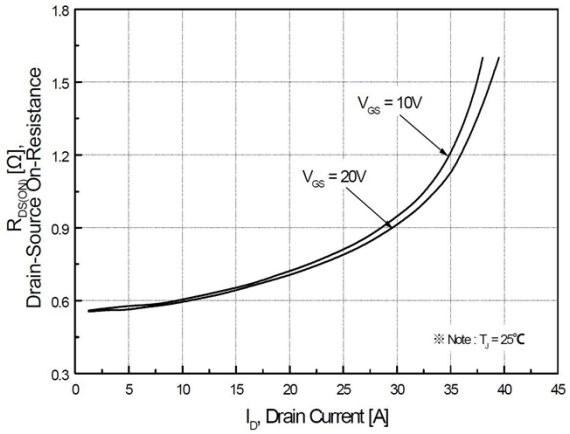
On-Region Characteristics



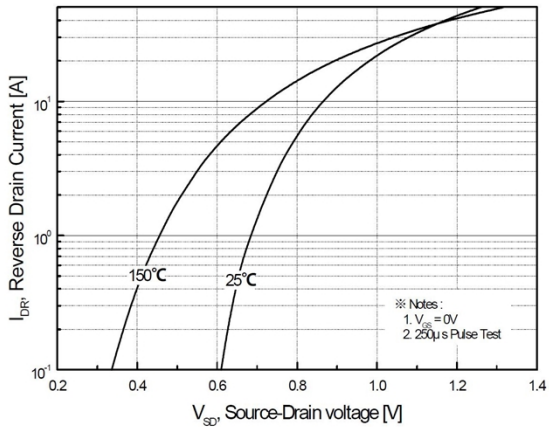
Transfer Characteristics



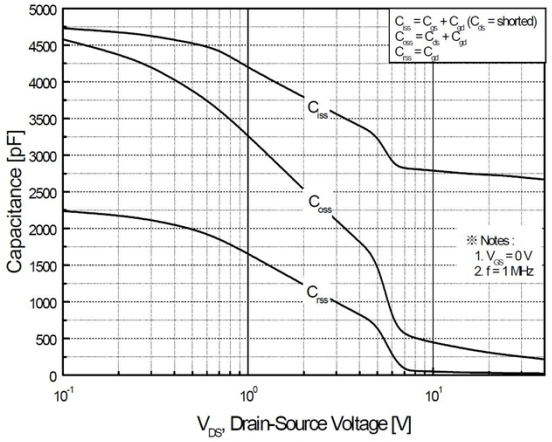
On-Resistance Variation vs. Drain Current and Gate Voltage



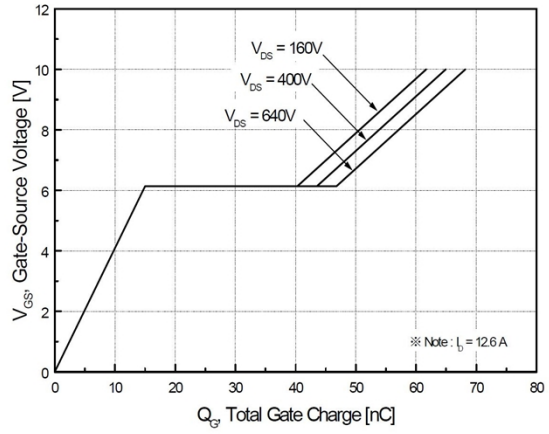
Body Diode Forward Voltage Variation vs. Source Current and Temperatue



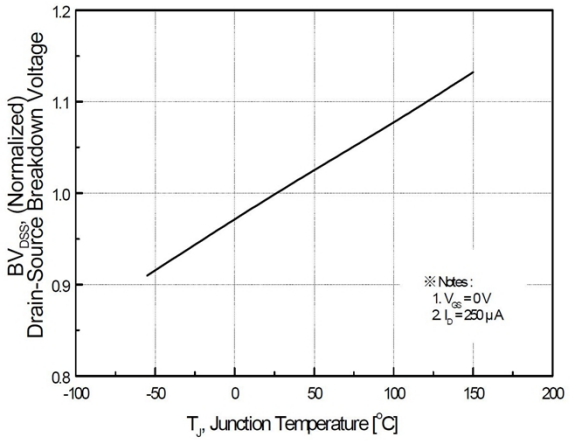
Capacitance Characteristics



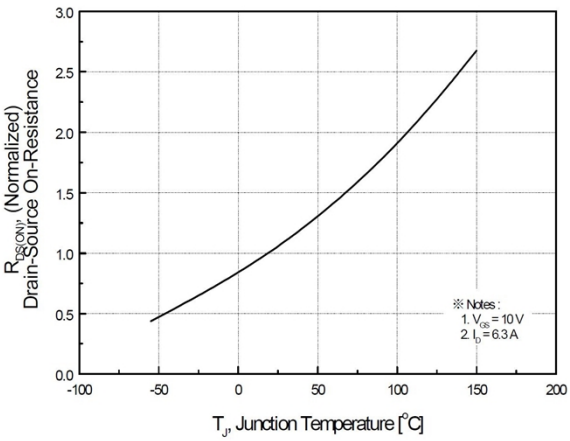
Gate Charge Characteristics



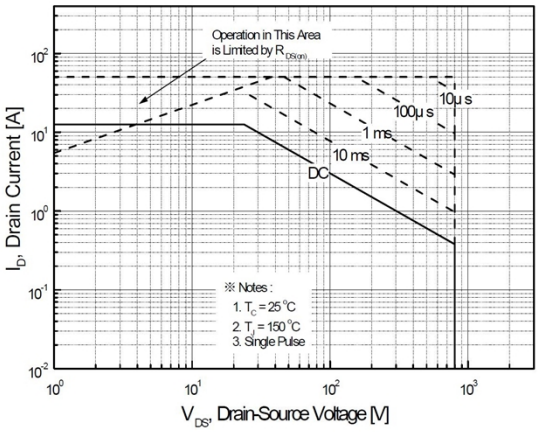
Breakdown Voltage Variation vs. Temperature



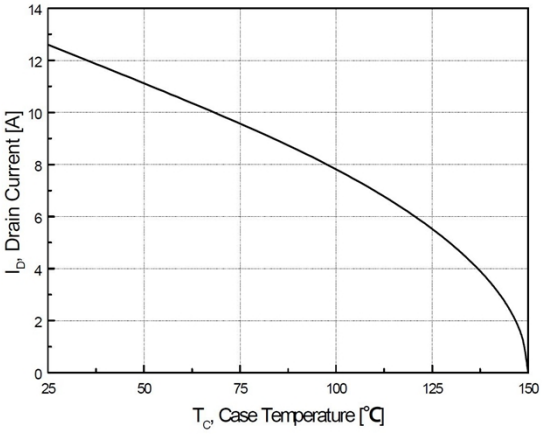
On-Resistance Variation vs. Temperature



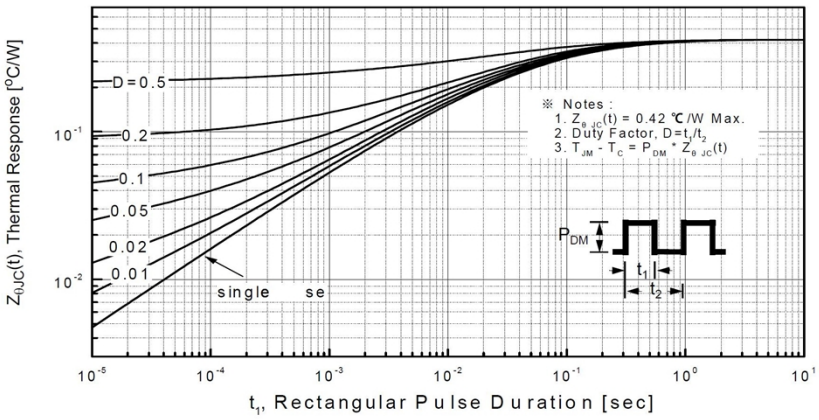
Maximum Safe Operating Area



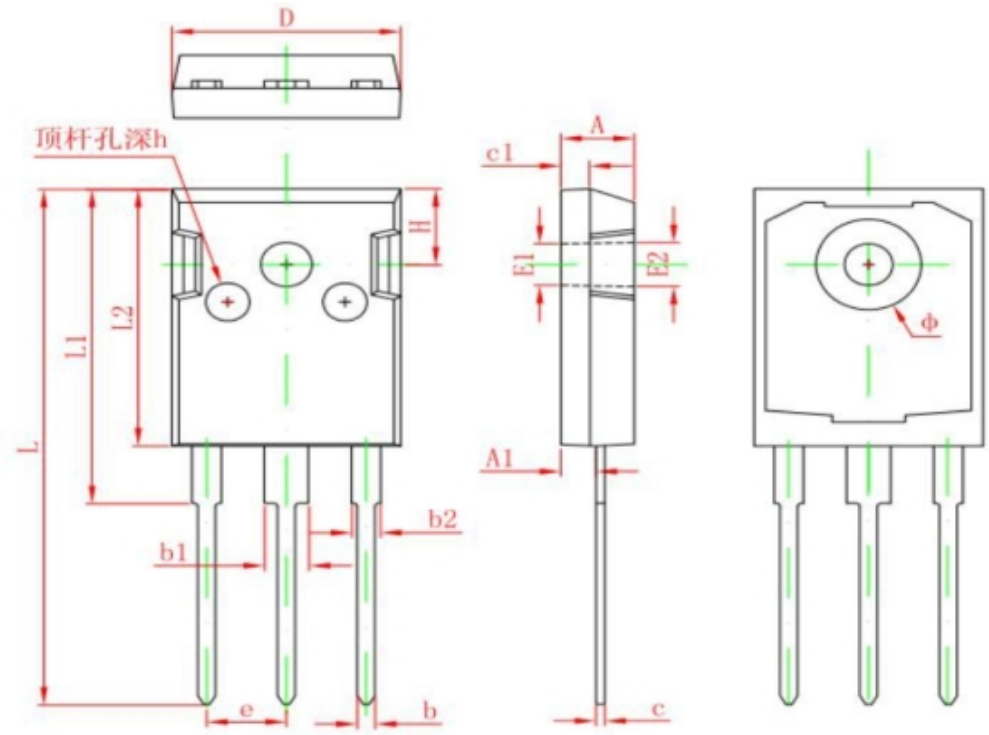
Maximum Drain Current vs. Case Temperature



Transient Thermal Response Curve



TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012