Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
270V	80mΩ@10V	40A

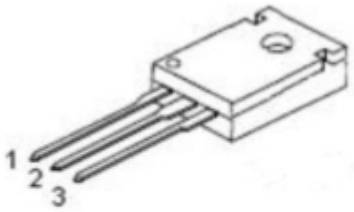
Feature

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

Application

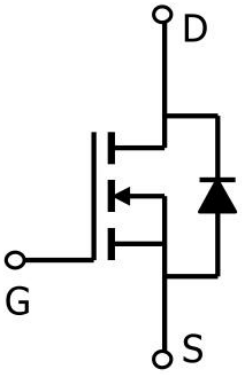
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

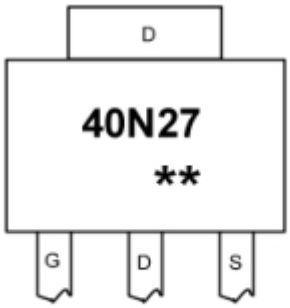


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



40N27 =Device Code
** =Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	270	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current1(T_C=25℃)	I_D	40	A
Pulsed Drain Current[2]	I_{DM}	160	A
Single Pulse Avalanche Energy[3]	E_{AS}	1049	A
Total Power Dissipation(T_C=25℃)	P_D	190	W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	0.65	℃/ W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	$T_{J,}$	-55 to 150	℃

Electrical characteristics

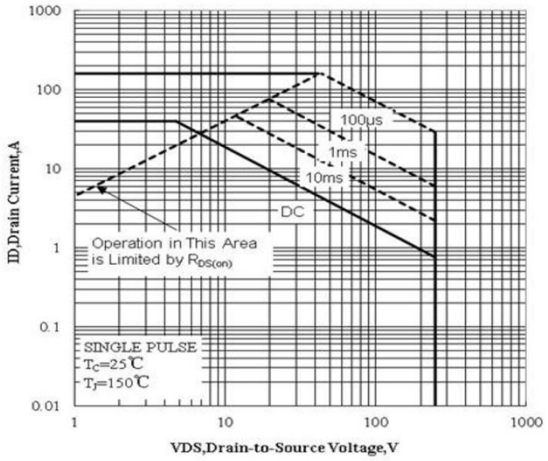
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	270			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =200V,V_{GS} = 0V , T_J=25℃			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±0.1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2	3	4	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =22.5A		80	100	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		2516		pF
Output Capacitance	C_{oss}			338		
Reverse Transfer Capacitance	C_{rss}			23		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=200V, V_{GS}=10V, I_D =40A		46		pF
Gate-Source Charge	Q_{gs}			17		
Gate-Drain Charge	Q_{gd}			20		
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=125V, V_{GS}=10V, R_G=10Ω, I_D =40A		31		nS
Rise Time	T_r			152		
Turn-Off Delay Time	$T_{d(off)}$			49		
Fall Time	T_f			20		

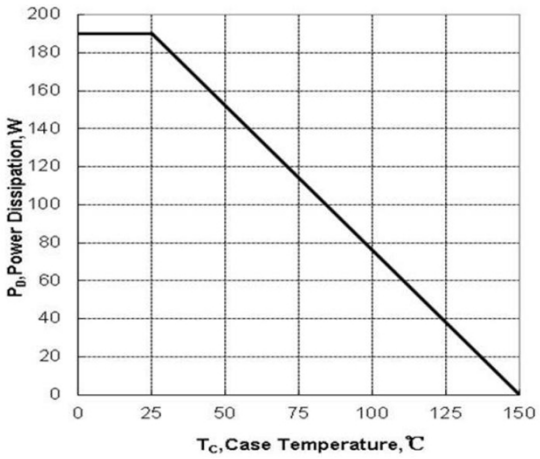
Note:

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 =30Ω ,L=10mH

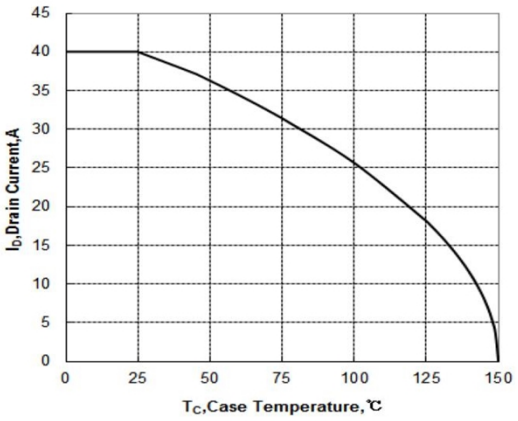
Typical Characteristics



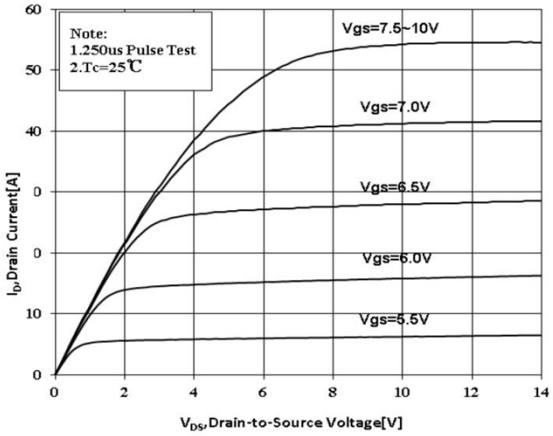
Maximum Forward Bias Safe Operating Area



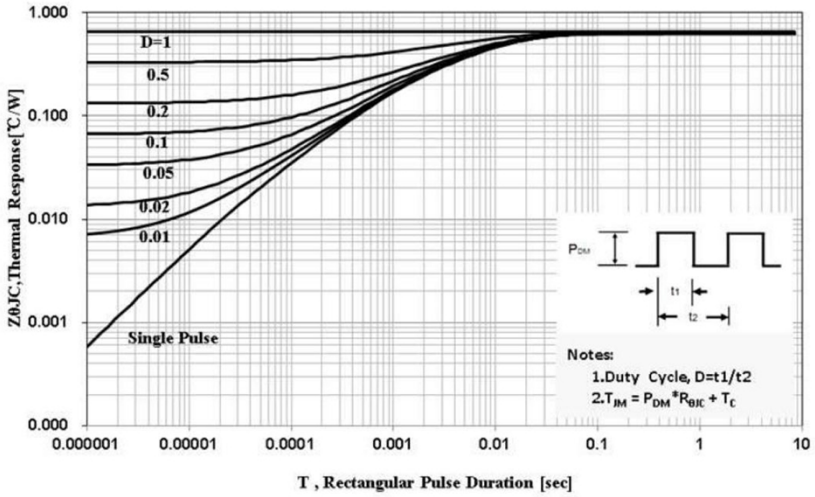
Maximum Power dissipation vs Case Temperature



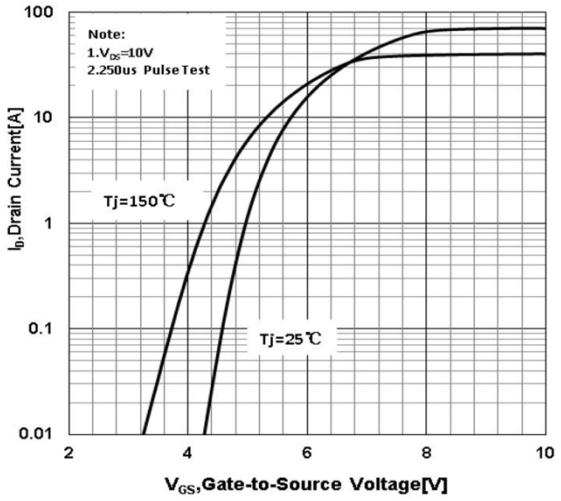
Maximum Continuous Drain Current vs Case Temperature



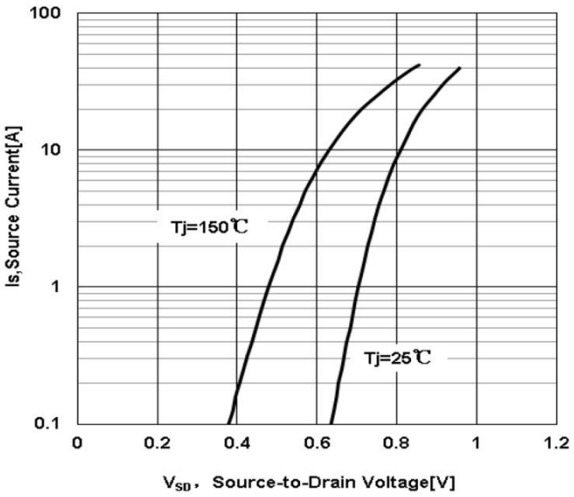
Typical Output Characteristics



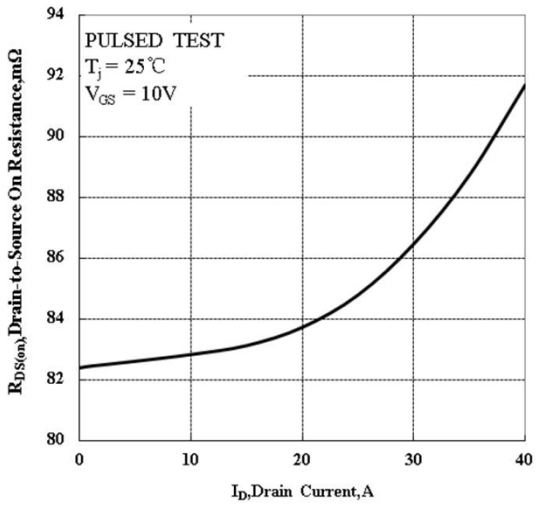
Maximum Effective Thermal Impedance , Junction to Case



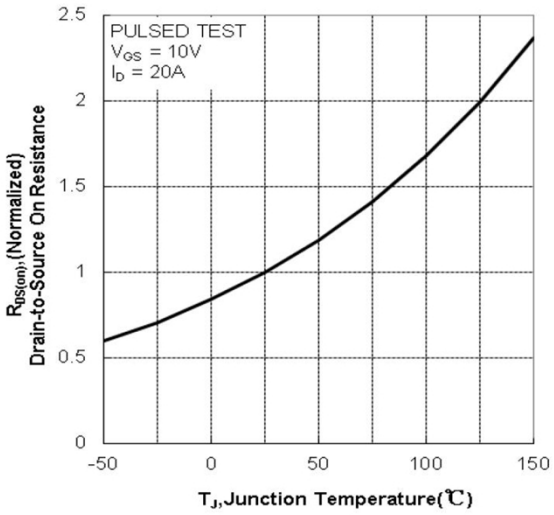
Typical Transfer Characteristics



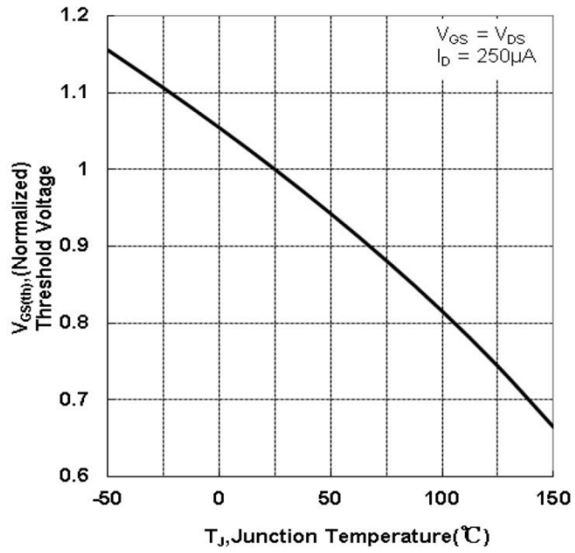
Typical Body Diode Transfer Characteristics



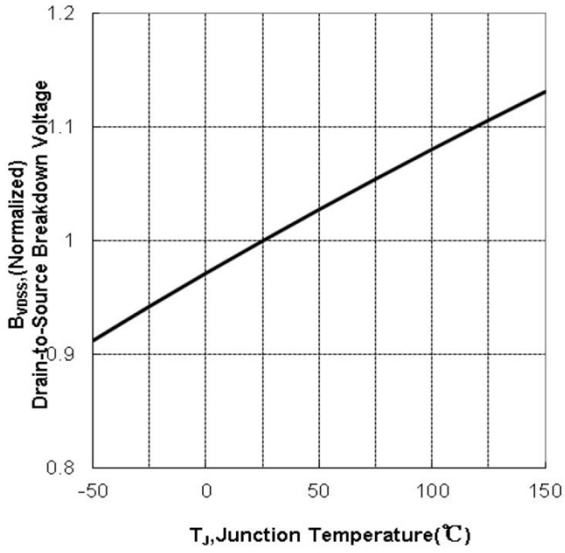
Typical Drain to Source ON Resistance
vs Drain Current



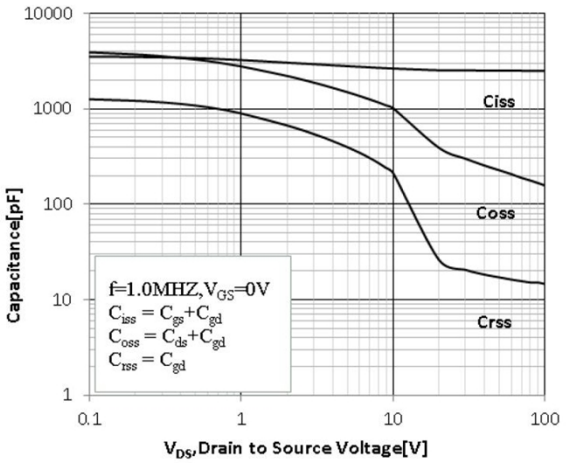
Typical Drian to Source on Resistance
vs Junction Temperature



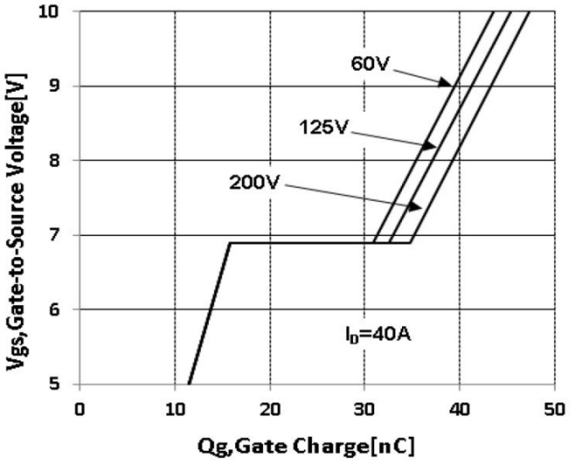
Typical Theshold Voltage vs Junction Temperature



Typical Breakdown Voltage vs Junction Temperature

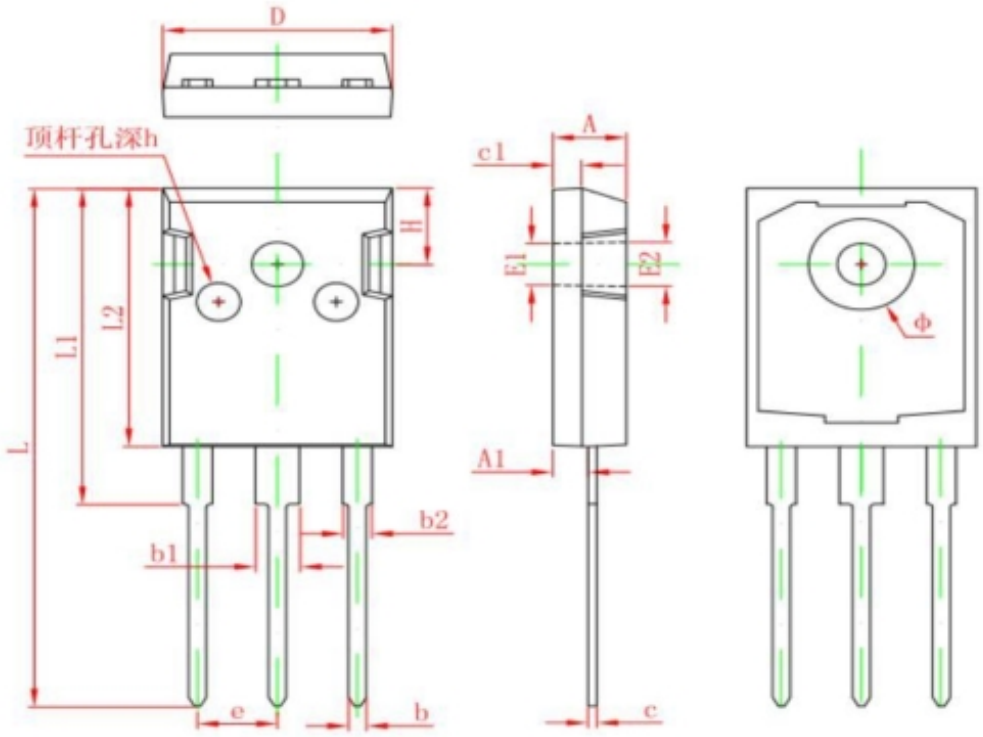


Typical Capacitance vs Drain to Source Voltage



Typical Gate Charge vs Gate to Source Voltage

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