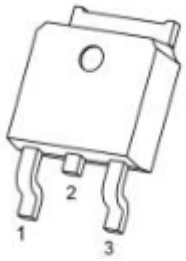
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	6.6mΩ@-4.5V	-55A
	8mΩ@-2.5V	

Feature

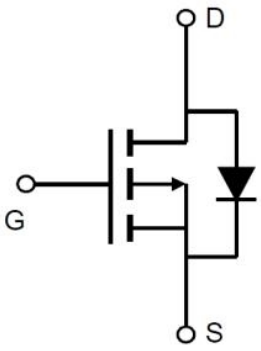
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Package

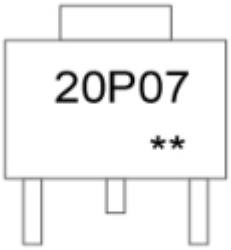


TO-252-2L(G:1 D:2 S:3)

Circuit diagram



Marking



20P07 : Product code
** : Week code.

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (VGS=0V)	V_{DS}	-20	V
Gate-Source Voltage (VDS=0V)	V_{GS}	±12	V
Drain Current-Continuous(Tc=25℃)	I_D	-55	A
Pulsed Drain Current	I_{DM}	-220	A
Maximum Power Dissipation(Tc=25℃)	P_D	38	W
Single pulse avalanche energy[1]	E_{AS}	125	mJ
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	2.8	℃/W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	62	℃/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

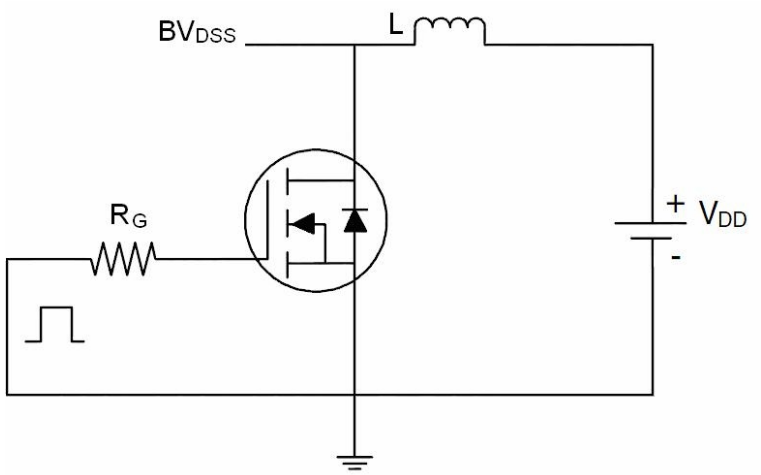
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V , V_{DS}=0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.35	-0.65	-1	V
Static Drain-Source On-Resistance[1]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-15A		6.6	9	mΩ
		V_{GS} =-2.5V, I_D =-12A		8	12	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V, f=1MHz		4600		pF
Output Capacitance	C_{oss}			460		
Reverse Transfer Capacitance	C_{rss}			459		
Total Gate Charge	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_D =-15A		46		pF
Gate Source Charge	Q_{gs}			7.3		
Gate Drain Charge	Q_{gd}			10		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=-10V, I_D =-14A, R_{GEN}=2.7Ω, V_{GS}=-10V		8		nS
Rise Time	T_r			59		
Turn-Off Delay Time	$T_{d(off)}$			111		
Fall Time	T_f			43		
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S				-55	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=-20A			-1.2	V
Reverse Recovery Time	t_{rr}	T_J =25℃, I_{SD}=-15A, V_{GS}=0V ,dI/dt=100A/μs		18		nS
Reverse Recovery Charge	Q_{rr}			7.7		nC

Note：

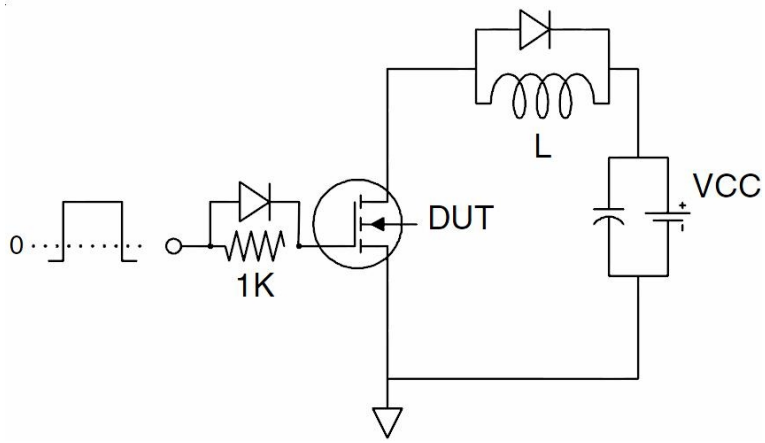
1. The EAS data shows Max. rating . The test condition is V_{DD}=-10V,V_G=-4.5V,L=0.5mH,Rg=25Ω

Test Circuit

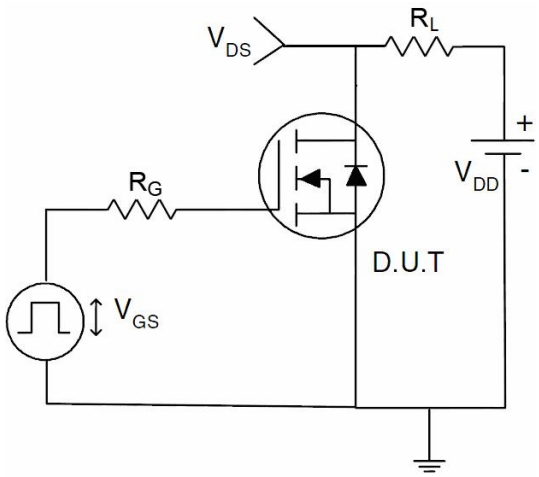
- EAS Test Circuits



- Gate Charge Test Circuit



- Switch Time Test Circuit



Typical Characteristics

Figure1: Output Characteristics

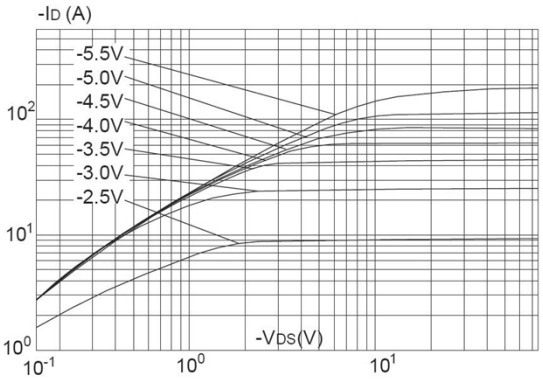


Figure 2: Typical Transfer Characteristics

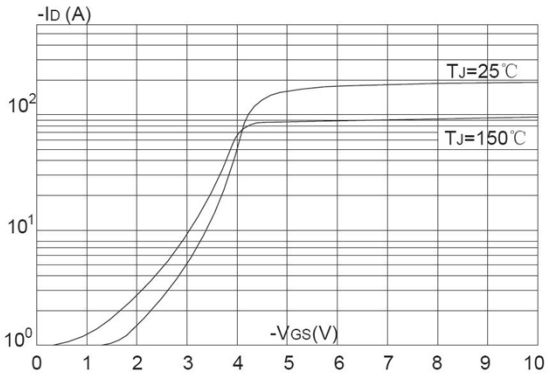


Figure 3: On-resistance vs. Drain Current

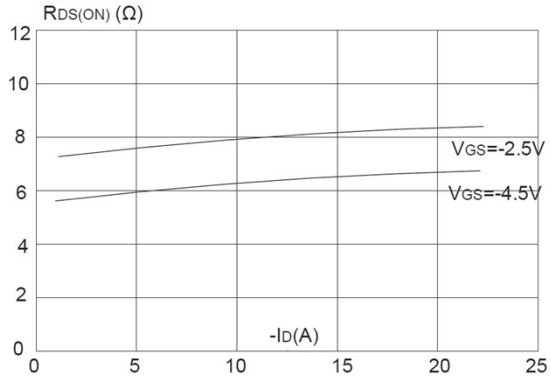


Figure 4: Body Diode Characteristics

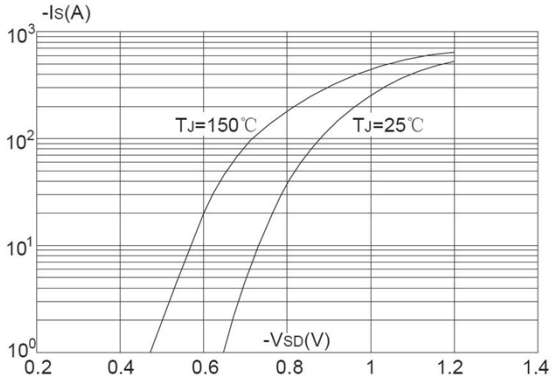


Figure 5: Gate Charge Characteristics

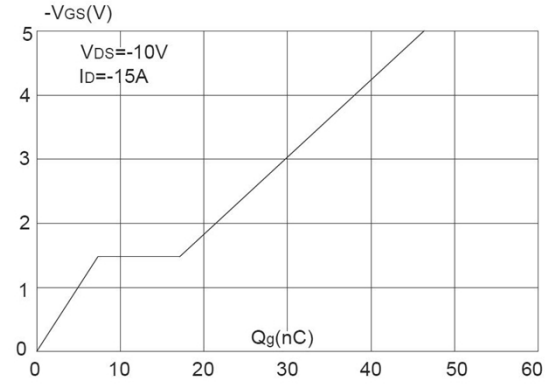


Figure 6: Capacitance Characteristics

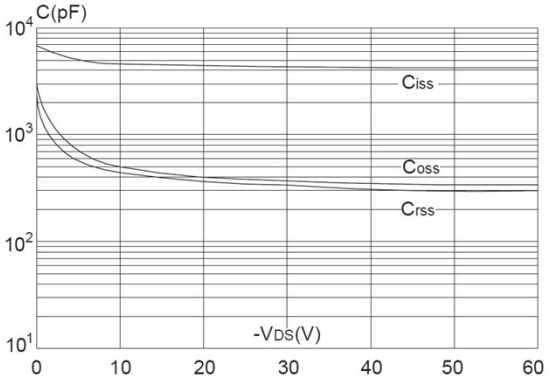


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

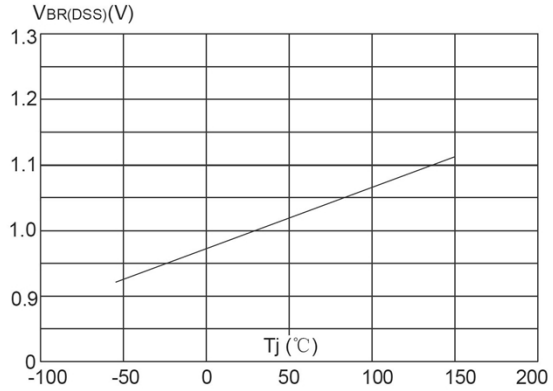


Figure 8: Normalized on Resistance vs. Junction Temperature

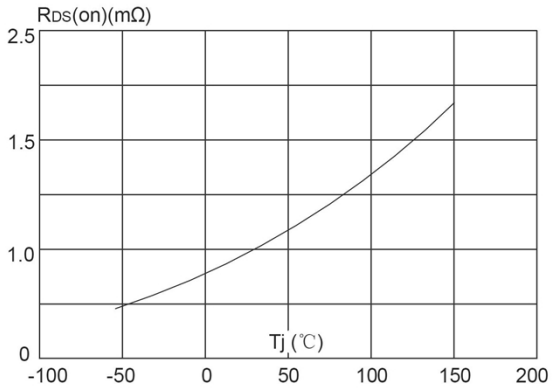


Figure 9: Maximum Safe Operating Area

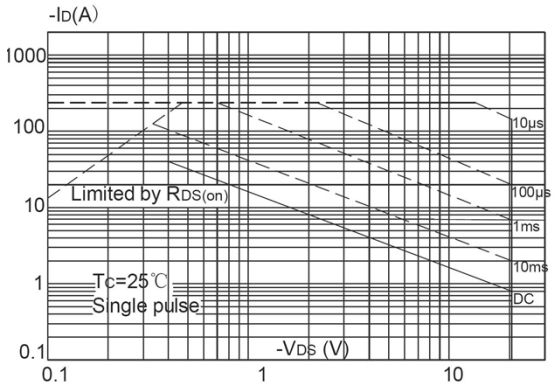


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

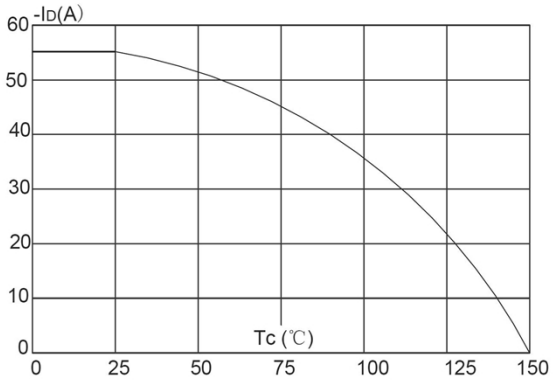
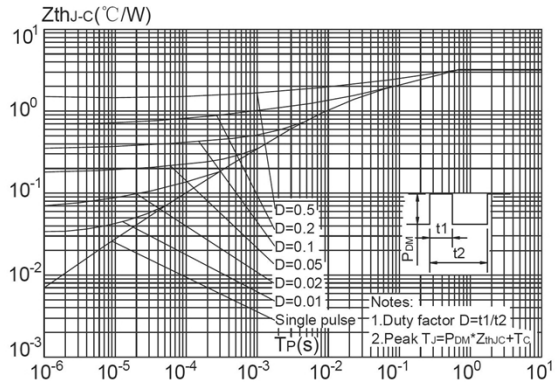
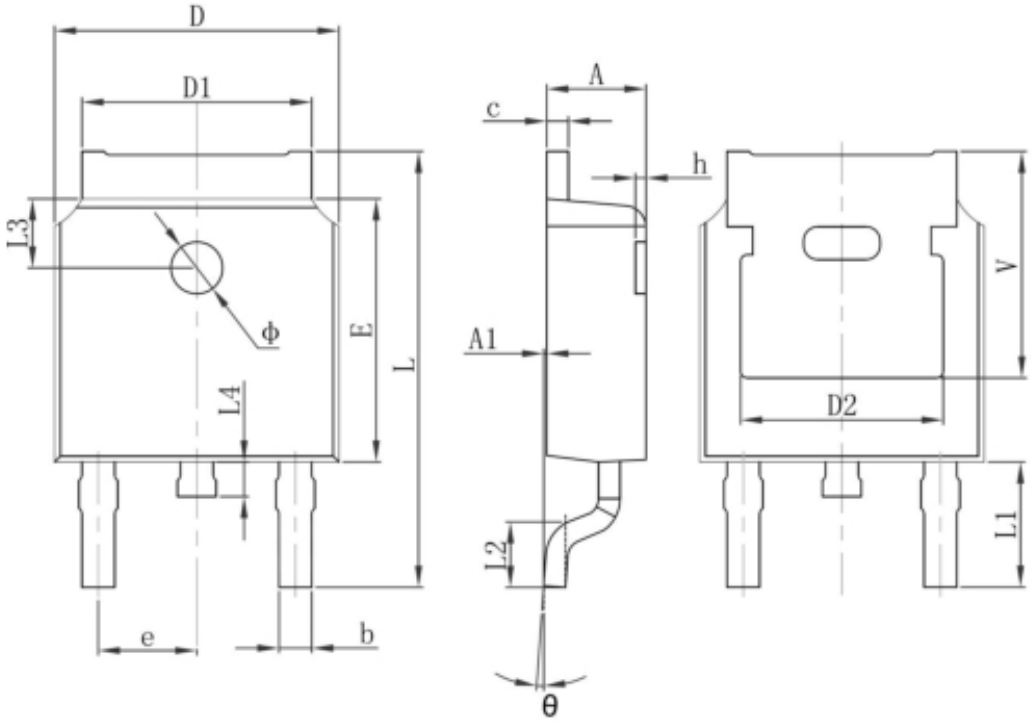


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-252 Package Information



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 REF.		0.190 REF.	
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 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
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 REF.		0.211 REF.	