

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	4.8m Ω @-10V	-120A
	6.5m Ω @4.5V	

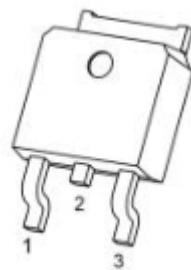
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

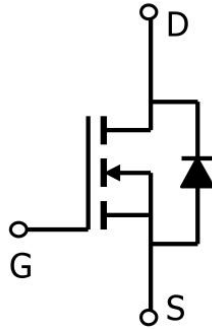
- Power switching application
- PWM Application
- DC-DC Converter

Package

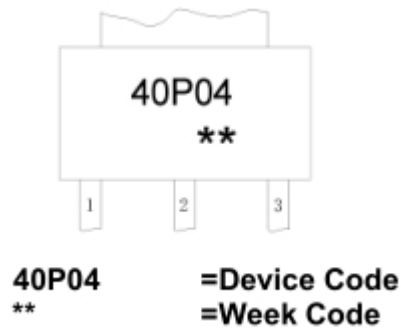


TO-252(1:G 2:D 3:S)

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_c=25^{\circ}\text{C}$)	I_D	-120	A
Pulsed Drain Current ²	I_{DM}	-480	A
Single Pulse Avalanche Energy ³	E_{AS}	809	mJ
Total Power Dissipation ⁴ ($T_c=25^{\circ}\text{C}$)	P_D	130	W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	0.96	$^{\circ}\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$

Electrical characteristics

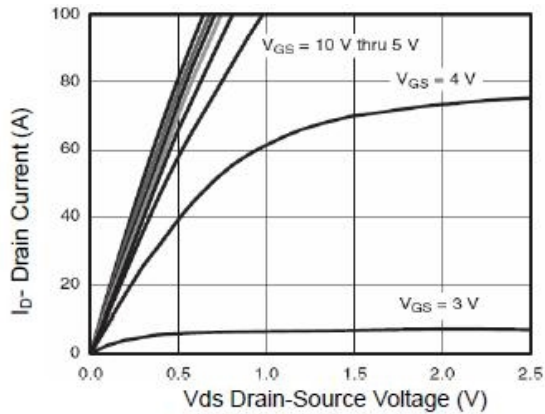
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -32V, V_{GS} = 0V, T_J = 25^{\circ}C$			-1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -20A$		4.8	6	m Ω
		$V_{GS} = -4.5V, I_D = -20A$		6.5	8.6	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -20V, f = 1MHz$		7010		pF
Output Capacitance	C_{oss}			640		
Reverse Transfer Capacitance	C_{rss}			450		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = -20V, I_D = -20A, V_{GS} = -10V$		74		nC
Gate-Source Charge	Q_{gs}			22		
Gate-Drain Charge	Q_{gd}			18		
Turn-on Delay Time	$T_{d(on)}$	$V_{DD} = -20V, I_D = -20A, V_{GS} = -10V, R_G = 2.4\Omega$		10		nS
Turn-on Rise Time	T_r			15		
Turn-off Delay Time	$T_{d(off)}$			93		
Turn-off Fall Time	T_f			20		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -1A, T_J = 25^{\circ}C$			-1.2	V

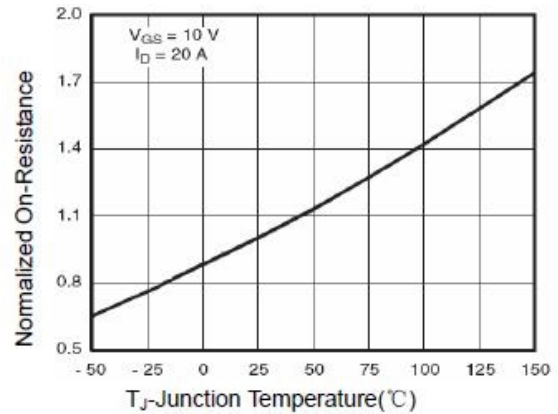
Note:

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 $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $V_{DD}=-20V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$
4. The power dissipation is limited by 150°C junction temperature

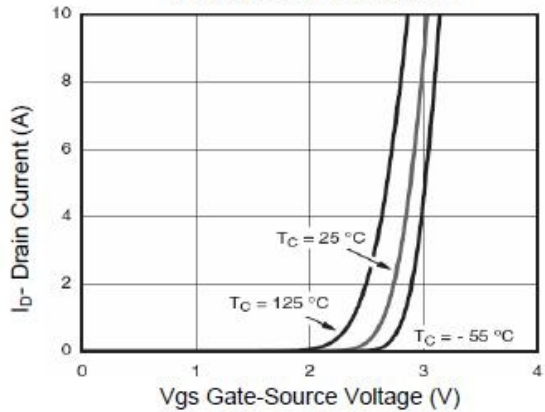
Typical Characteristics



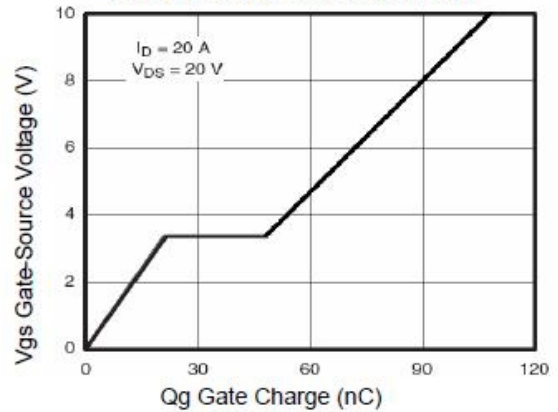
Output Characteristics



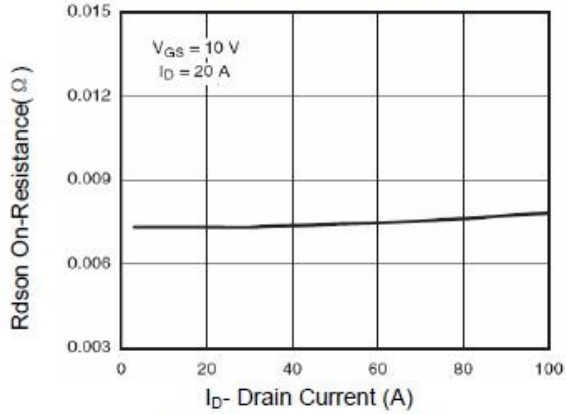
$R_{DS(on)}$ -Junction Temperature



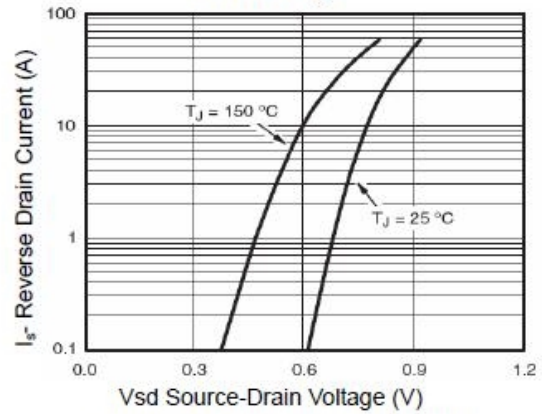
Transfer Characteristics



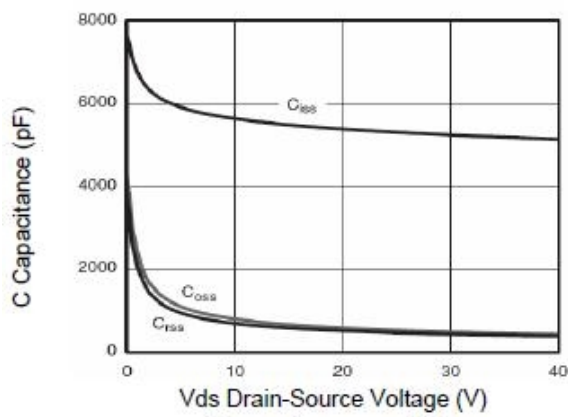
Gate Charge



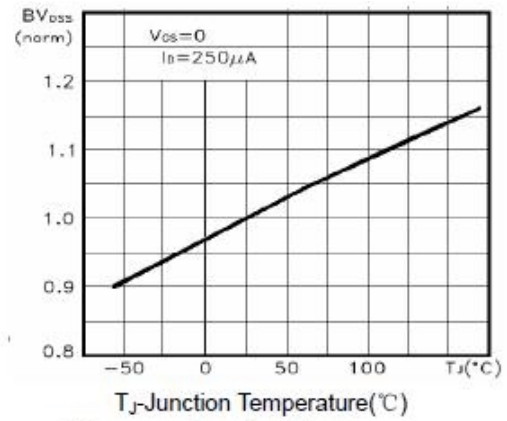
$R_{DS(on)}$ - Drain Current



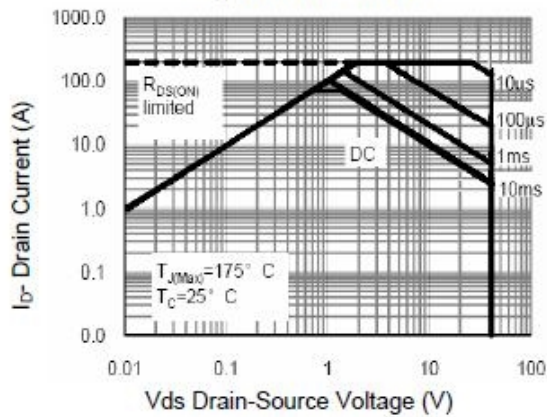
Source- Drain Diode Forward



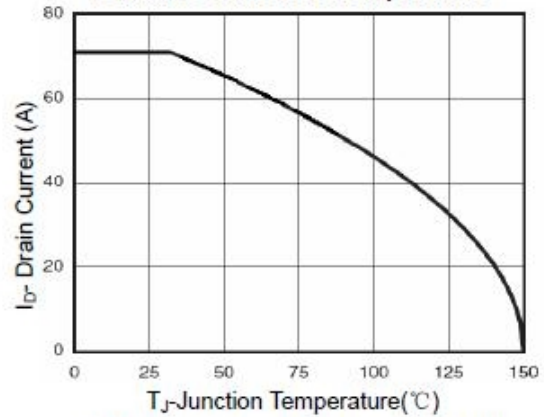
Capacitance vs Vds



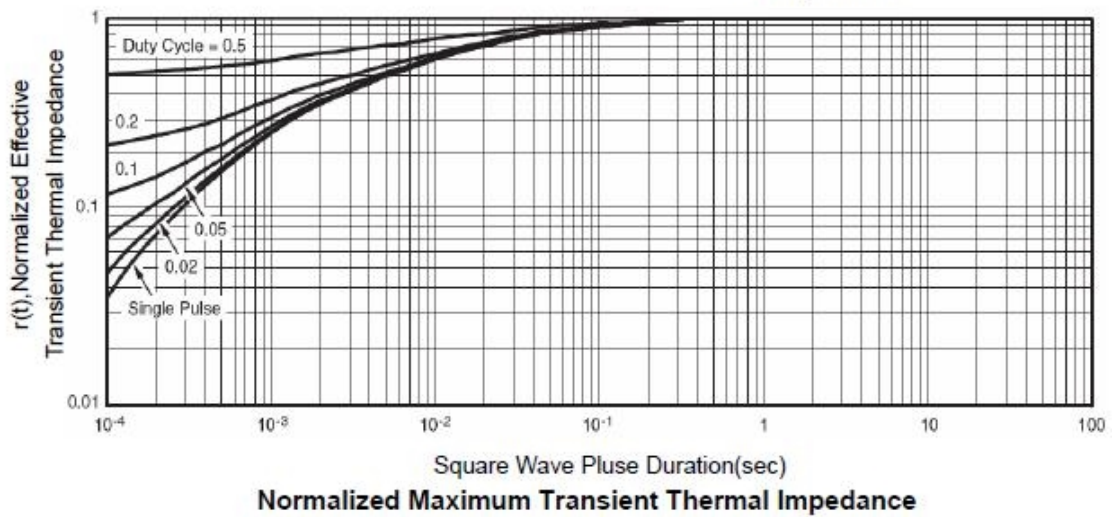
BVdss vs Junction Temperature



Safe Operation Area

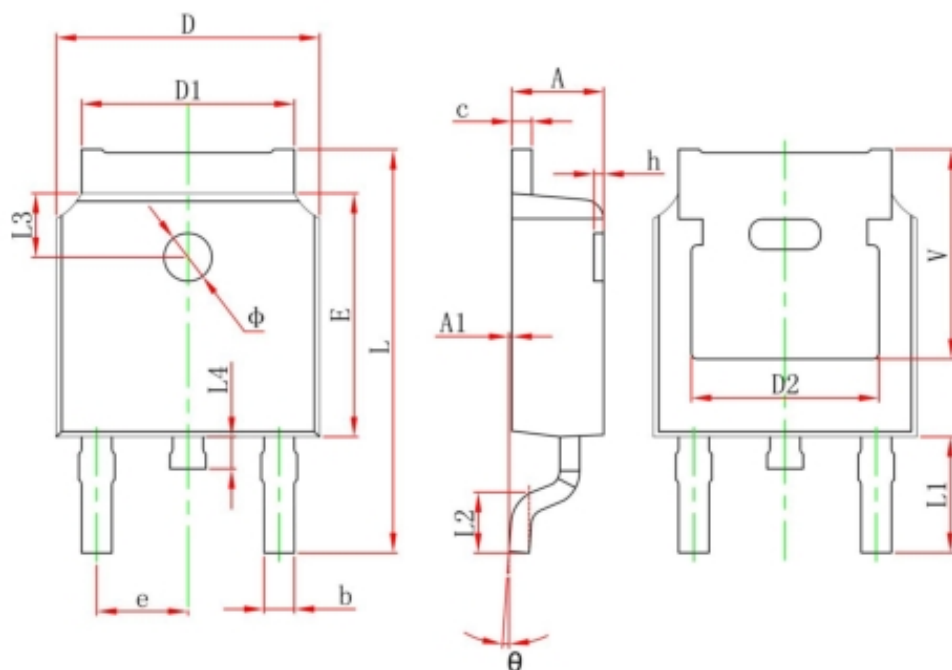


ID Current Derating vs Junction Temperature



Normalized Maximum Transient Thermal Impedance

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.	