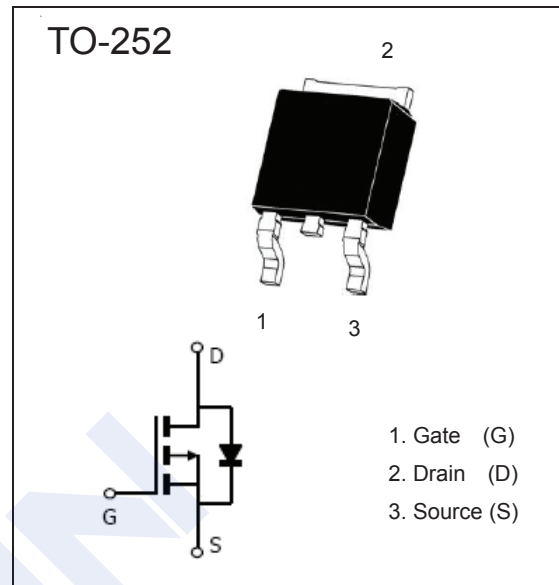


P-Channel MOSFET

2KJ6024

■ Features

- $V_{DS} (V) = -40V$
- $I_D = -40A$
- $R_{DS(ON)} < 14m\Omega @ V_{GS} = -10V$
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

■ Absolute Maximum Ratings ($T_c = 25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	-40	A
Continuous Drain Current ($T_c = 100^\circ C$)		-25	
Pulsed Drain Current		I_{DM}	
Single pulse avalanche energy (Note 1)	EAS	544	mJ
Power Dissipation	P_D	80	W
Thermal Resistance, Junction- to-Case (Note 2)	$R_{\theta JC}$	1.88	$^\circ C/W$
Junction Temperature	T_J	175	$^\circ C$
Junction Storage Temperature Range	T_{stg}	-55 to 175	

Notes:

1. EAS condition: $T_J = 25^\circ C, V_{DD} = -20V, V_G = -10V, L = 1mH, R_g = 25\Omega, I_{AS} = 33A$
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

2KJ6024

■ Electrical Characteristics (T_c = 25°C Unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.5	-1.9	-3.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-14A		10	14	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-12A	34			S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-20V, f=1MHz		2960		pF
Output Capacitance	C _{oss}			370		
Reverse Transfer Capacitance	C _{rss}			310		
Switching Characteristics (Note 4)						
Total Gate Charge	Q _g	V _{DS} =-20V, I _D =-14A, V _{GS} = -10V		72		nC
Gate Source Charge	Q _{gs}			14		
Gate Drain Charge	Q _{gd}			15		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-20V, I _D =-20A, V _{GS} = -10 V, R _G = 3 Ω		10		ns
Turn-On Rise Time	t _r			18		
Turn-Off Delay Time	t _{d(off)}			38		
Turn-Off Fall Time	t _f			24		
Drain-Source Diode Characteristics						
Maximum Body-Diode Continuous Current	I _S				-40	A
Diode Forward Voltage (Note 3)	V _{SD}	I _{SD} =-20 A, V _{GS} =0V			-1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =-20A,		40		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs (Note 3)		42		nC

Notes:

- Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2% .
- Guaranteed by design, not subject to production

■ Marking

Marking	J6024 K***
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2KJ6024

Typical Electrical and Thermal Characteristics

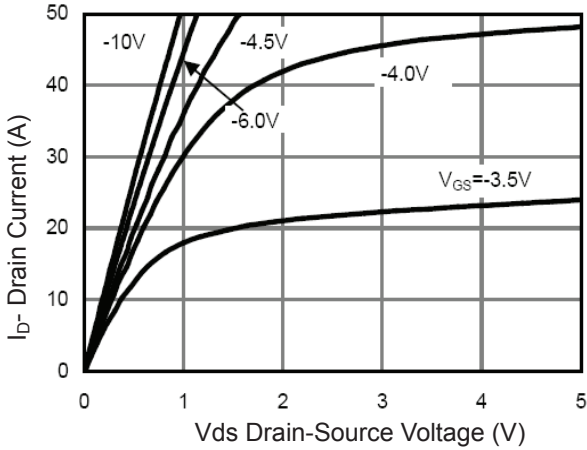


Figure 1 Output Characteristics

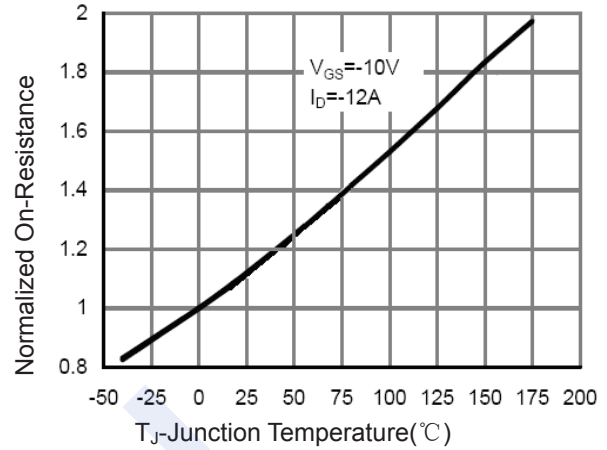


Figure 4 R_{dson} -Junction Temperature

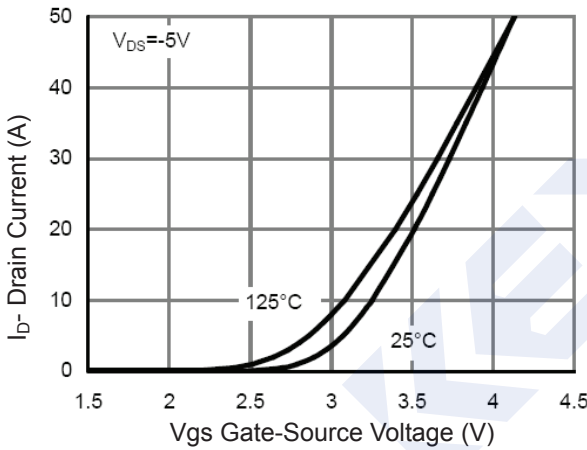


Figure 2 Transfer Characteristics

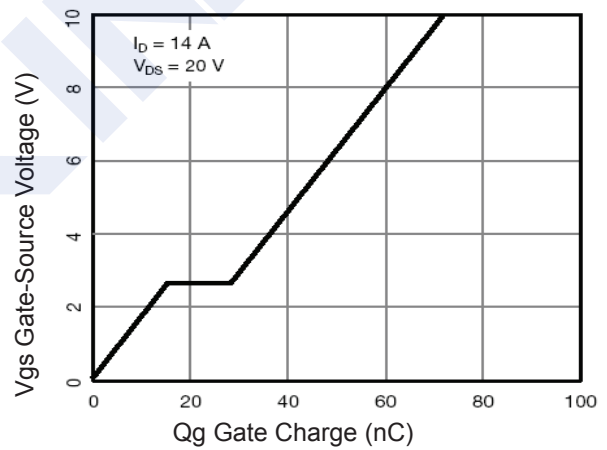


Figure 5 Gate Charge

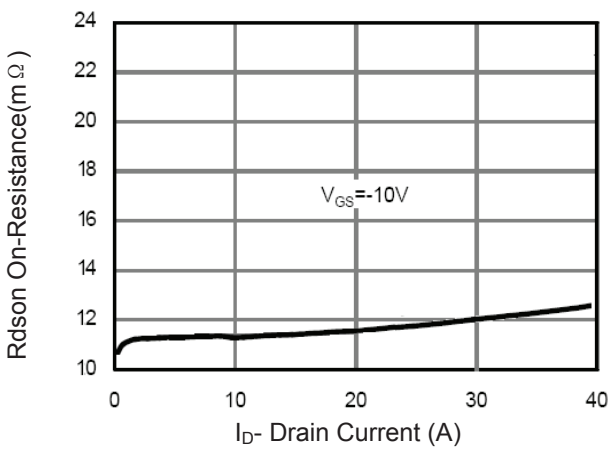


Figure 3 R_{dson} - Drain Current

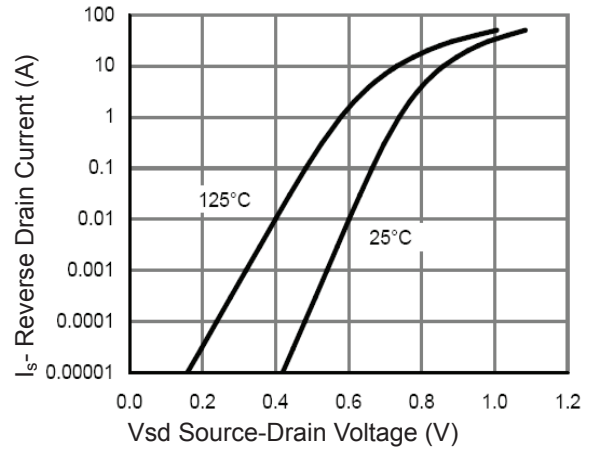


Figure 6 Source- Drain Diode Forward

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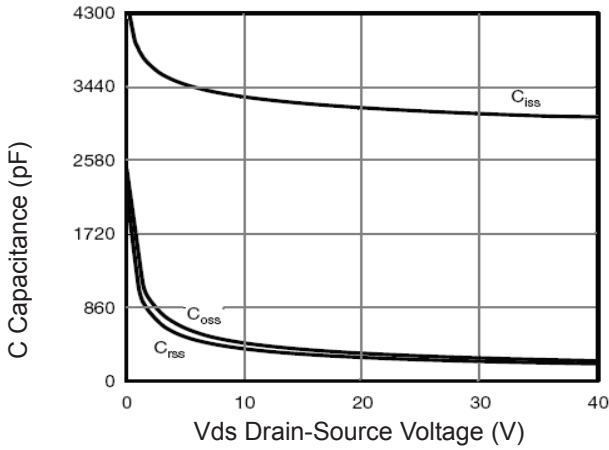


Figure 7 Capacitance vs Vds

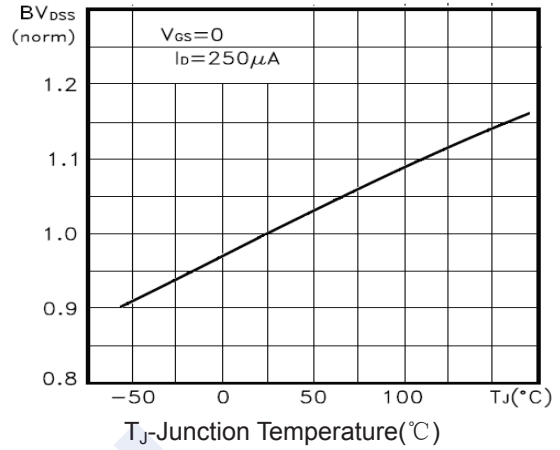


Figure 9 BV_{DSS} vs Junction Temperature

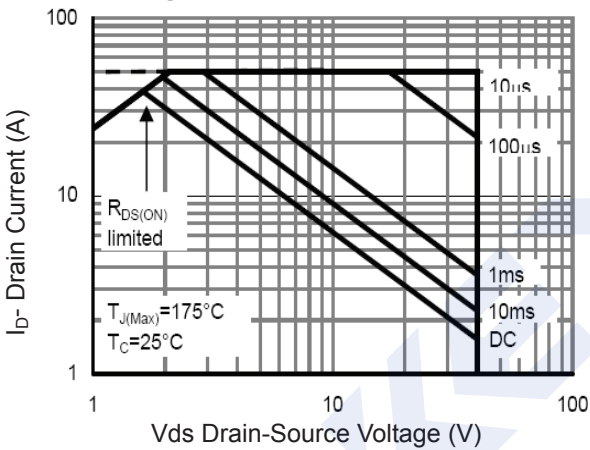


Figure 8 Safe Operation Area

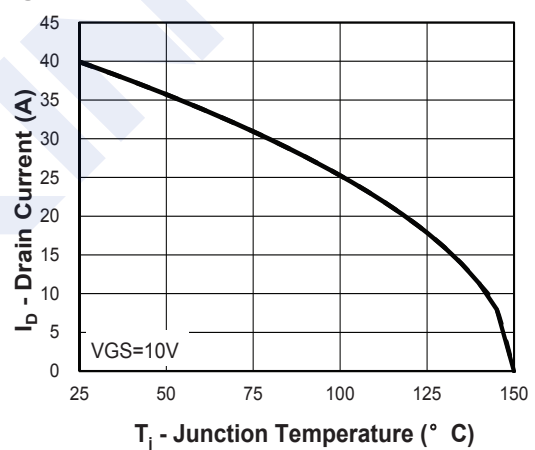


Figure 10 I_D Current Derating vs Junction Temperature

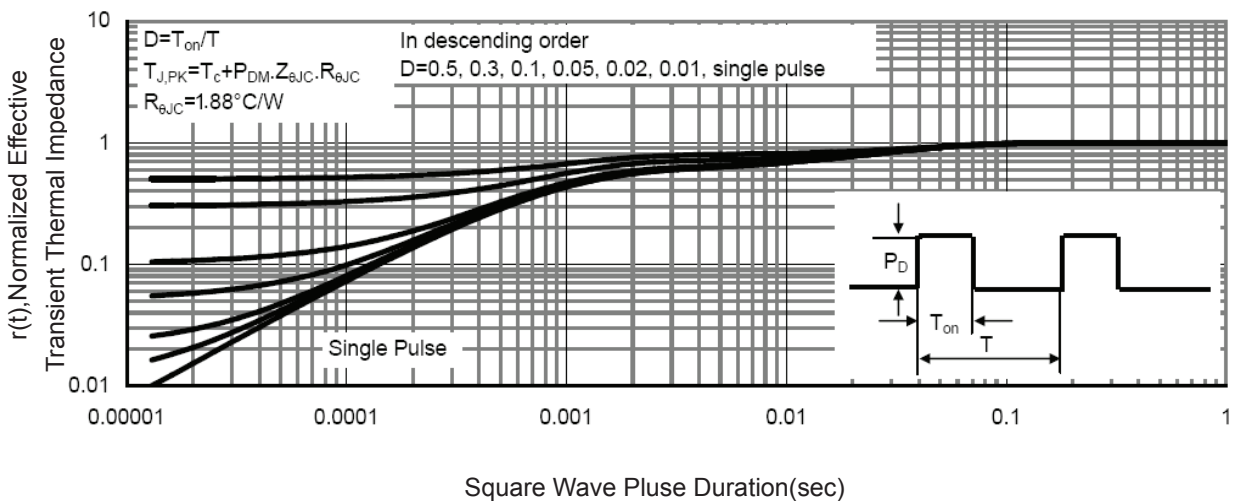
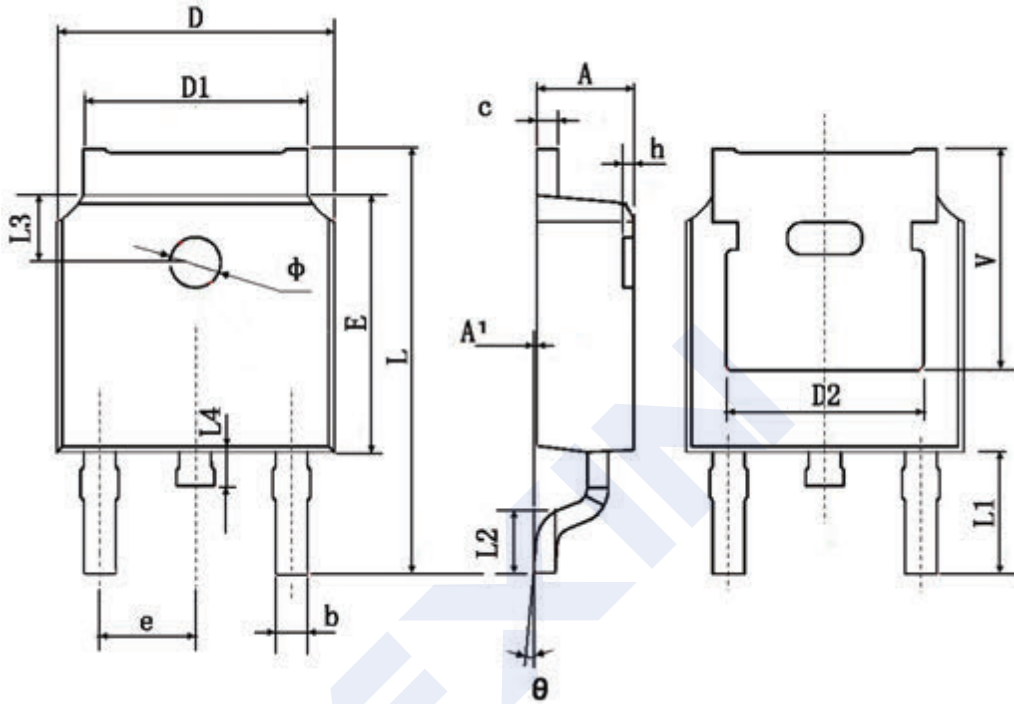


Figure 11 Normalized Maximum Transient Thermal Impedance

2KJ6024

■ Package Dimension

TO-252



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