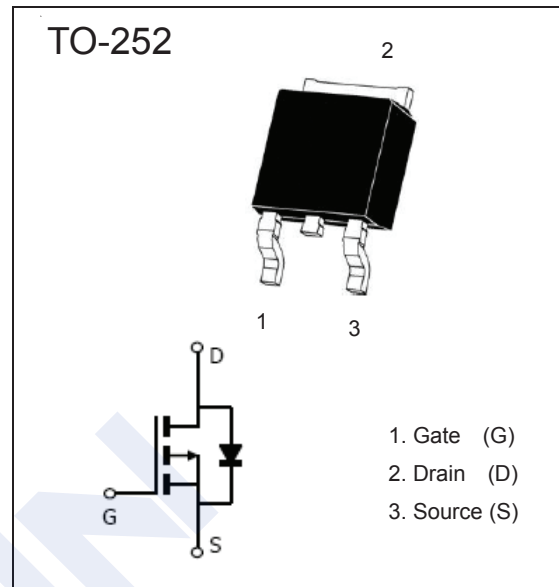


P-Channel MOSFET

2KJ6056

■ Features

- Advanced Process Technology
- Surface Mount
- 175°C Operating Temperature
- Fast Switching
- P-Channel
- Fully Avalanche Rated

■ Absolute Maximum Ratings (T_J = 25°C Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	-150	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current	I _D	(T _C = 25°C)	-21
		(T _C = 100°C)	-14.9
Pulsed Drain Current ^{*1}	I _{DM}	-84	A
Single pulse avalanche energy ^{*2}	E _{AS}	310	mJ
Power Dissipation	P _D	110	W
Thermal Resistance, Junction- to-Ambient ^{*3}	R _{θJA}	50	°C/W
Thermal Resistance, Junction- to-Case	R _{θJC}	1.4	
Junction Temperature	T _J	175	°C
Junction Storage Temperature Range	T _{stg}	-55 to 175	

Notes:

*1.limited by maximum junction temperature.

*2. EAS condition: starting T_J = 25°C, L = 14mH, R_G = 25Ω, I_{AS} = -6.6A.

*3. Surface Mounted on FR4 Board, t ≤ 10 sec.

2KJ6056

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250 \mu A$	-150			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	$I_D = -1mA, \text{Reference to } 25^\circ C$		-0.02		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -6.6A^{*1}$			95	mΩ
		$V_{GS} = -10V, I_D = -6.6A, T_J = 150^\circ C^{*1}$			225	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-0.7		-2.0	V
Forward Transconductance	g_{fs}	$V_{DS} = -50V, I_D = -6.6A^{*1}$	3.6			S
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = -120V, V_{GS} = 0V$			-1	μ A
		$V_{DS} = -120V, V_{GS} = 0V, T_J = 150^\circ C$			-250	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS} = 20V$			100	nA
Gate-to-Source Reverse Leakage		$V_{GS} = -20V$			-100	
Total Gate Charge	Q_g	$I_D = -6.6A$			66	nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -120V$			8.1	
Gate-to-Drain ("Miller") Charge	Q_{gd}	$V_{GS} = -10V,^{*1}$			35	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -75V$		14		ns
Rise Time	t_r	$I_D = -6.6A$		36		
Turn-Off Delay Time	$t_{d(off)}$	$R_G = 6.8 \Omega$		53		
Fall Time	t_f	$R_D = 12 \Omega^{*1}$		37		
Internal Drain Inductance	L_D	Between lead, 6mm (0.25in.) from package and center of die contact:		4.5		nH
Internal Source Inductance	L_S			7.5		nH
Input Capacitance	C_{iss}	$V_{GS} = 0V$		860		pF
Output Capacitance	C_{oss}	$V_{DS} = -25V$		220		
Reverse Transfer Capacitance	C_{rss}	$f = 1.0MHz$		130		
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			-21	A
Pulsed Source Current (Body Diode) *2	I_{SM}				-44	
Diode Forward Voltage	V_{SD}	$T_J = 25^\circ C, I_S = -6.6A, V_{GS} = 0V^{*1}$			-1.6	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = -6.6A$		160	560	ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s^{*1}$		1.2	1.7	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

*1 Pulse width $\leq 300 \mu s$; duty cycle $\leq 2\%$.

*2 Repetitive rating; pulse width limited by max. junction temperature.

■ Marking

Marking	J6056 K***
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2KJ6056

Typical Electrical and Thermal Characteristics

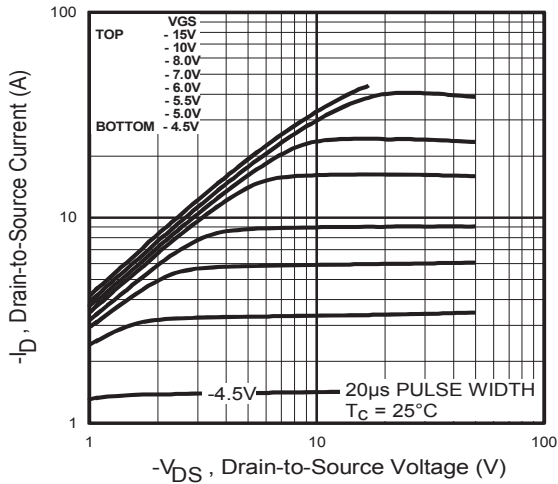


Fig. 1 Typical Output Characteristics

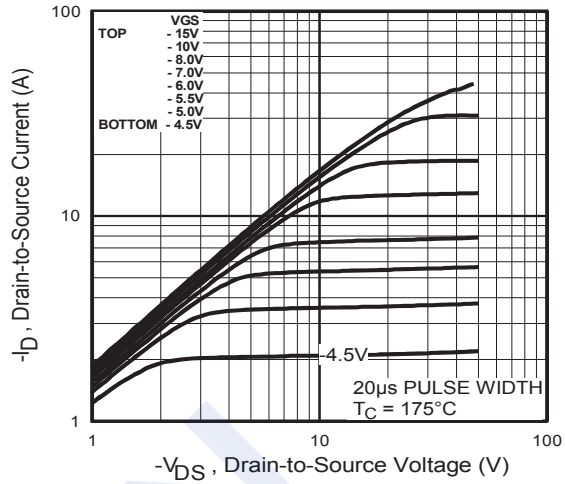


Fig. 2 Typical Output Characteristics

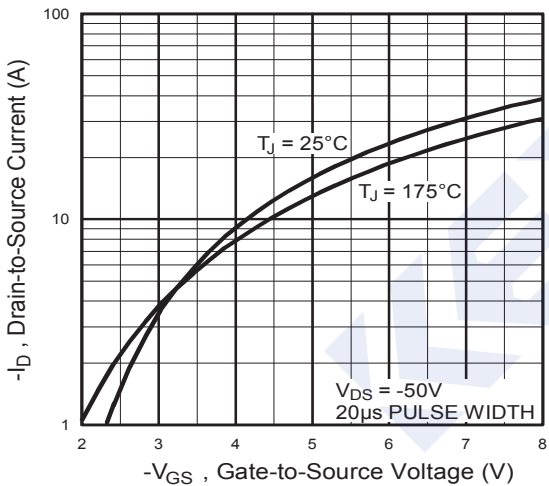


Fig. 3 Typical Transfer Characteristics

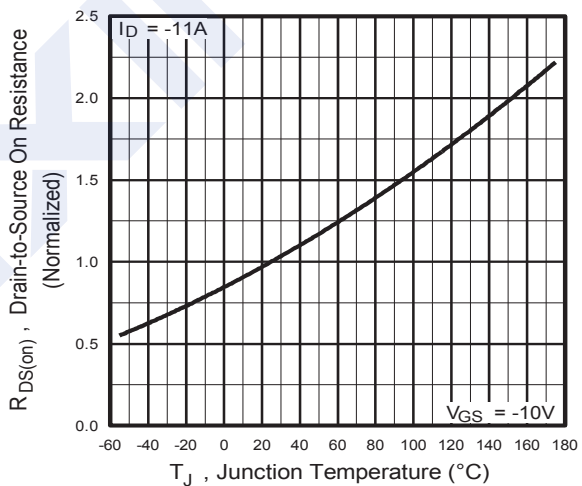


Fig. 4 Normalized On-Resistance vs. Temperature

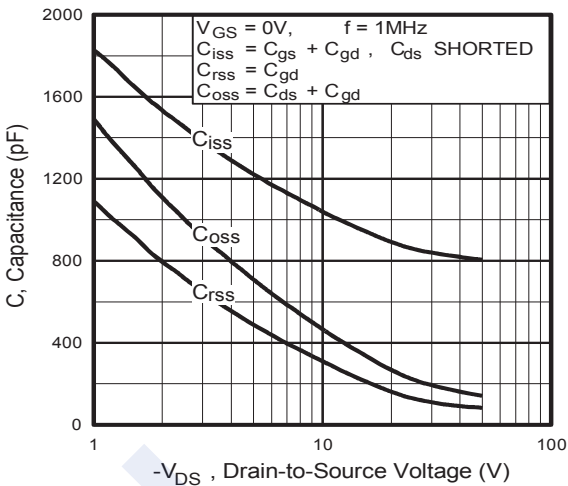


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

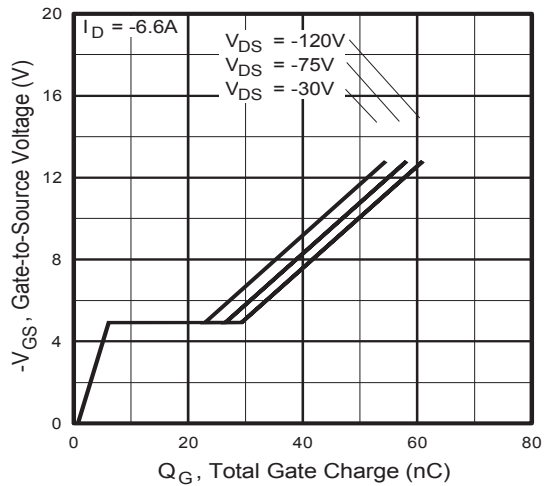


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

2KJ6056

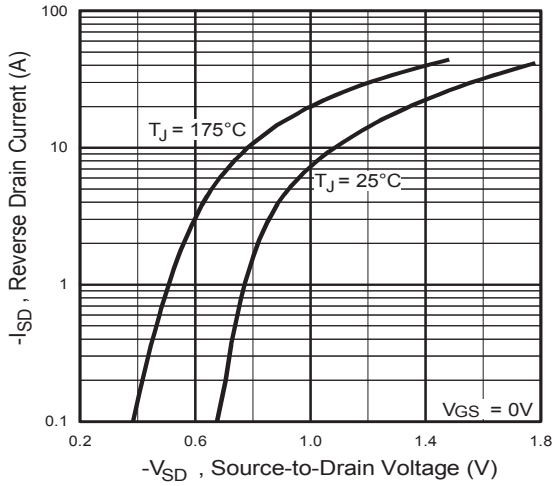


Fig. 7 Typical Source-to-Drain Diode Forward Voltage

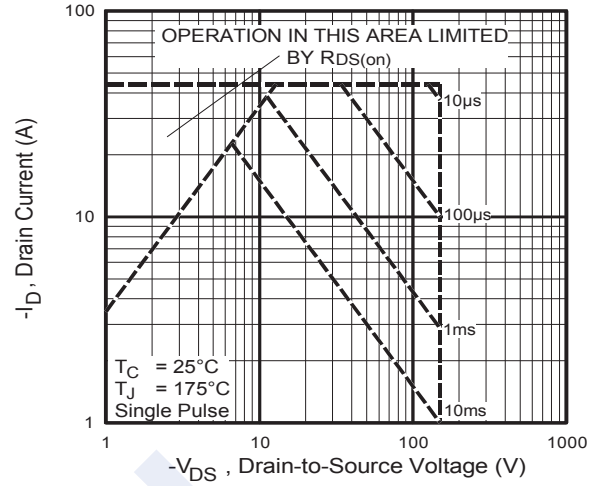


Fig 8. Maximum Safe Operating Area

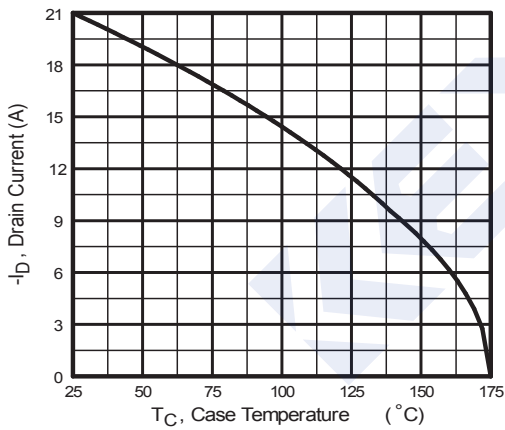


Fig 9. Maximum Drain Current vs. Case Temperature

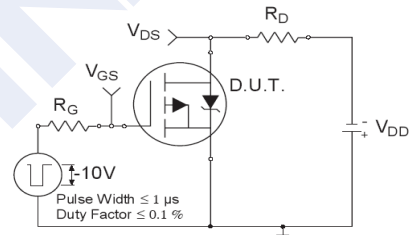


Fig 10a. Switching Time Test Circuit

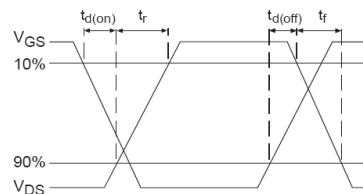


Fig 10b. Switching Time Waveforms

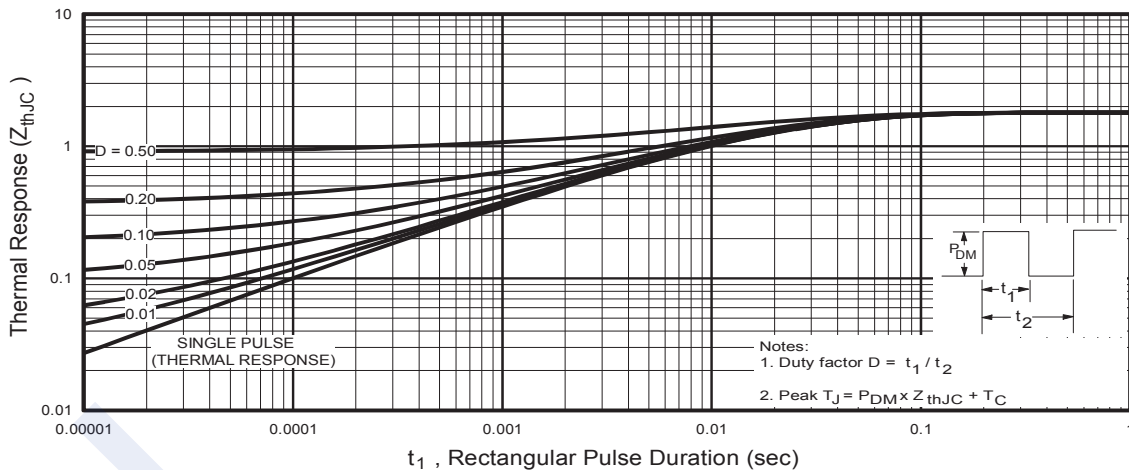
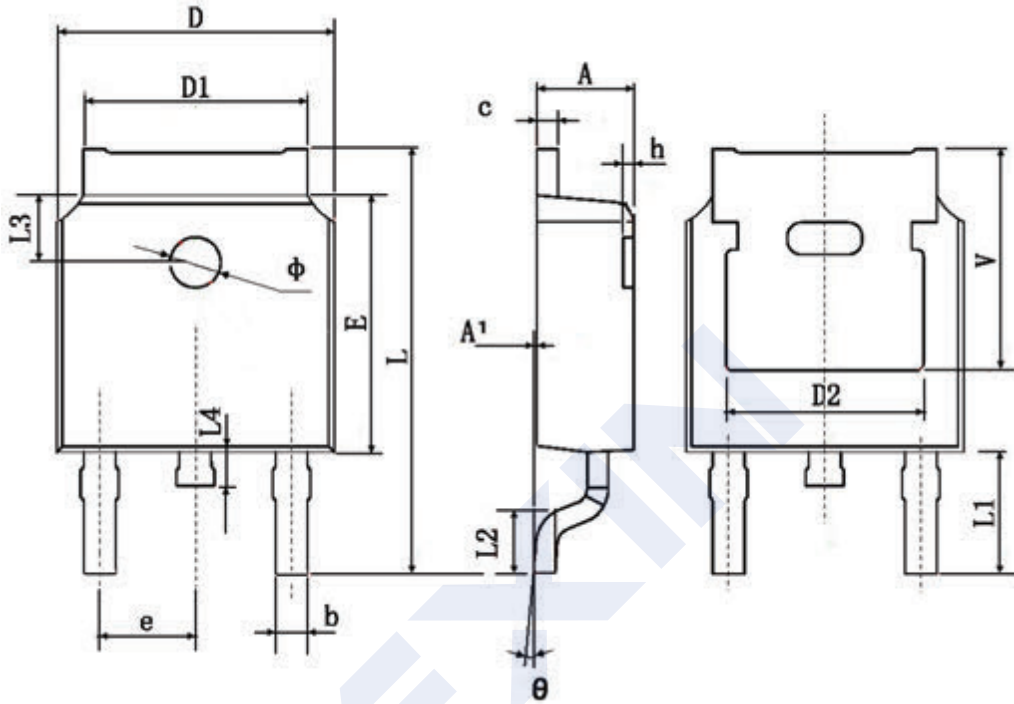


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

2KJ6056

■ 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.	