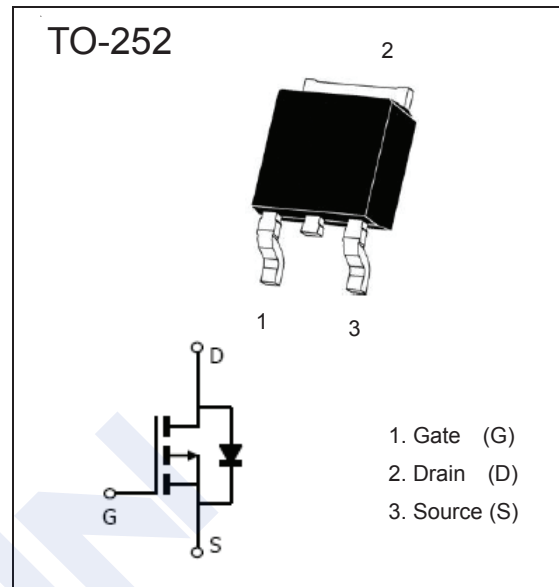


P-Channel MOSFET

2KJ6028

■ Features

- $V_{DS} (V) = -30V$
- $I_D = -50A$
- $R_{DS(ON)} < 11m\Omega @ V_{GS} = -10V$
- 100% Avalanche tested

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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current	I_D	$T_c = 25^\circ C$	-50	A
		$T_c = 100^\circ C$	-42	
Pulsed Drain Current	I_{DM}	-200		
Single Pulse Avalanche Energy	Note 1	EAS	100	mJ
Single Pulse Avalanche Current		I_{AS}	-50	A
Power Dissipation	$T_c = 25^\circ C$	P_D	58	W
Thermal Resistance, Junction- to-Ambient	Note 2	$R_{\theta JA}$	40	$^\circ C/W$
Thermal Resistance, Junction- to-Case	Note 2	$R_{\theta JC}$	2.6	
Junction Temperature	T_J		175	$^\circ C$
Storage Temperature Range	T_{stg}		-55 to 175	

Notes:

1. EAS condition: $I_D = 25A$
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

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■ Electrical Characteristics ($T_j = 25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
		$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$, $T_j = 125^\circ\text{C}$			-70	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 16\text{V}$			± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-1.0		-2.0	V
Static Drain-Source On-Resistance (Note 3)	$R_{DS(on)}$	$V_{GS} = -10\text{V}$, $I_D = -50\text{A}$			11	m Ω
		$V_{GS} = -4.5\text{V}$, $I_D = -25\text{A}$			15	
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$		2900	3770	pF
Output Capacitance	C_{oss}			835		
Reverse Transfer Capacitance	C_{rss}			21		
Switching Characteristics (Note 4)						
Total Gate Charge	Q_g	$V_{DS} = -24\text{V}$, $I_D = -50\text{A}$, $V_{GS} = -10\text{V}$		11	14	nC
Gate Source Charge	Q_{gs}			5		
Gate Drain Charge	Q_{gd}			42		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{V}$, $V_{GS} = -10\text{V}$, $I_D = -50\text{A}$, $R_G = 3.5\Omega$		7		ns
Turn-On Rise Time	t_r			3		
Turn-Off Delay Time	$t_{d(off)}$			45		
Turn-Off Fall Time	t_f			14		
Drain-Source Diode Characteristics						
Maximum Body-Diode Continuous Current	I_S				-50	A
Diode Forward Voltage (Note 3)	V_{SD}	$I_{SD} = -50\text{A}$, $V_{GS} = 0\text{V}$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_F = -50\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$ (Note 3)		35		nS
Reverse Recovery Charge	Q_{rr}			26		nC

Notes:

- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- Guaranteed by design, not subject to production

■ Marking

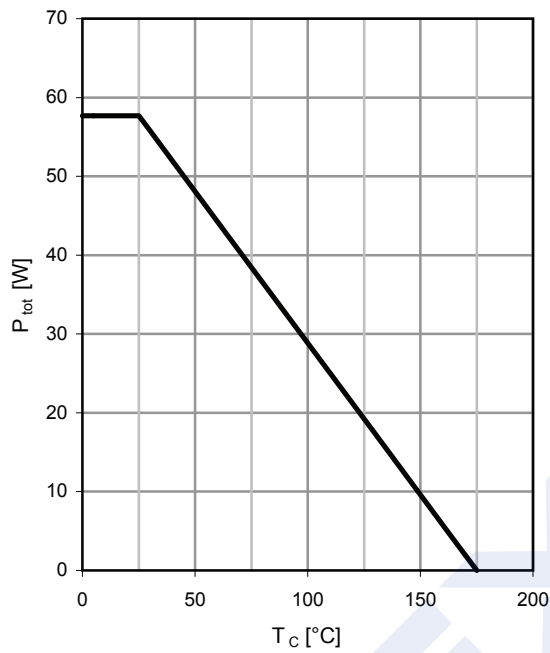
Marking	J6028 K***
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Typical Electrical and Thermal Characteristics

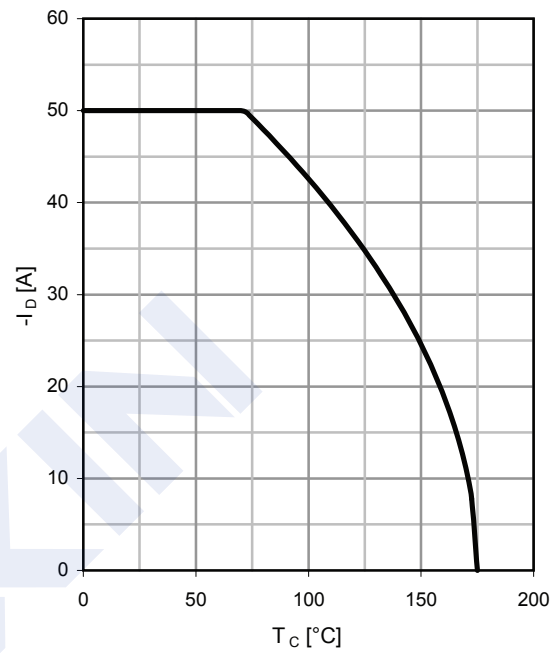
1 Power dissipation

$$P_{tot} = f(T_C); V_{GS} \leq -6V$$



2 Drain current

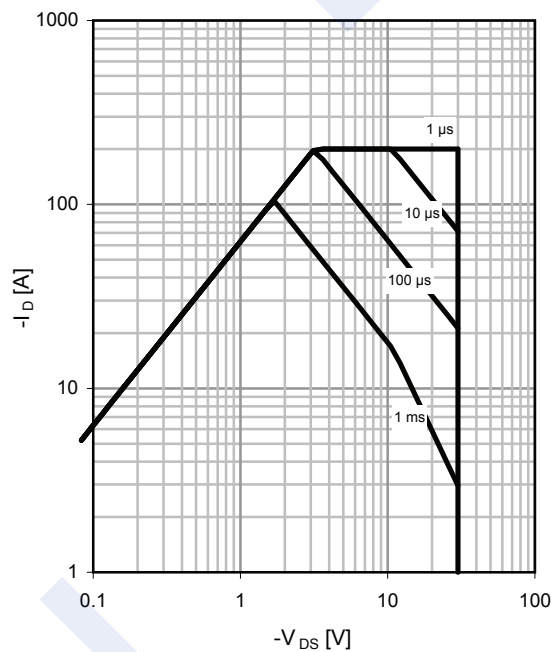
$$I_D = f(T_C); V_{GS} \leq -6V$$



3 Safe operating area

$$I_D = f(V_{DS}); T_C = 25^\circ\text{C}; D = 0$$

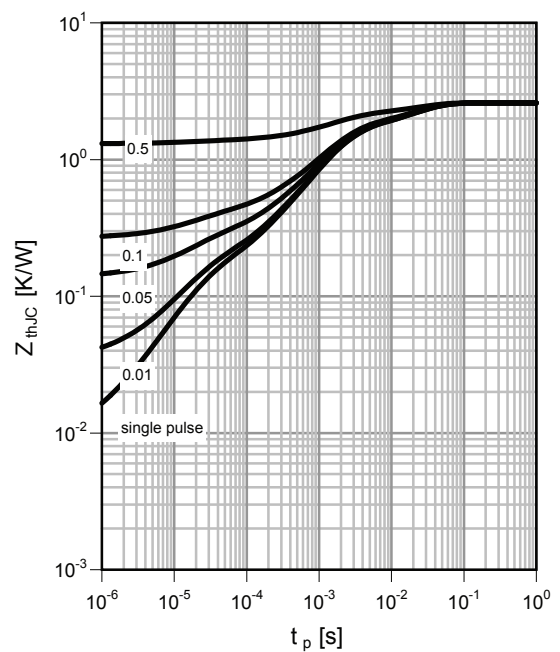
parameter: t_p



4 Max. transient thermal impedance

$$Z_{thJC} = f(t_p)$$

parameter: $D = t_p/T$

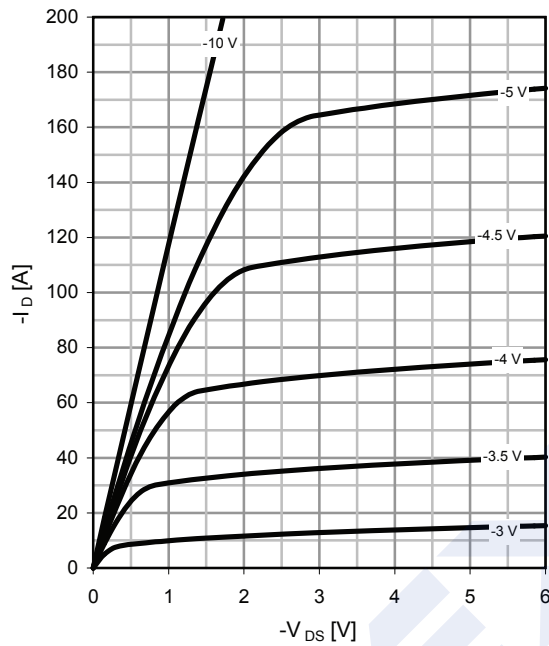


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5 Typ. output characteristics

$$I_D = f(V_{DS}); T_j = 25^\circ\text{C}$$

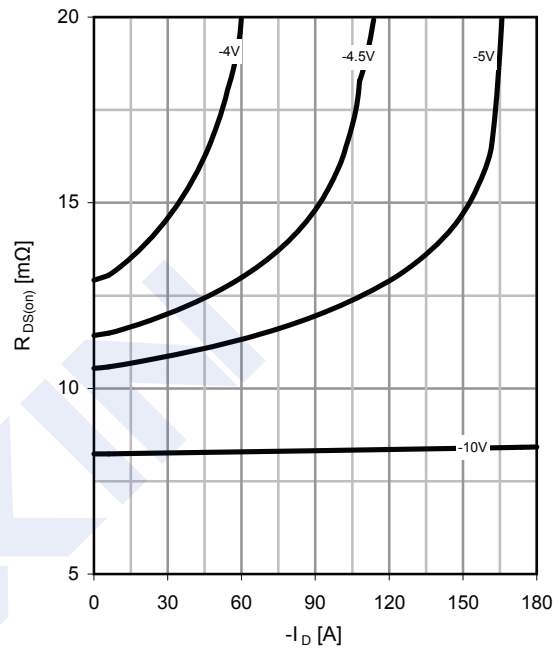
parameter: V_{GS}



6 Typ. drain-source on-state resistance

$$R_{DS(on)} = f(I_D); T_j = 25^\circ\text{C}$$

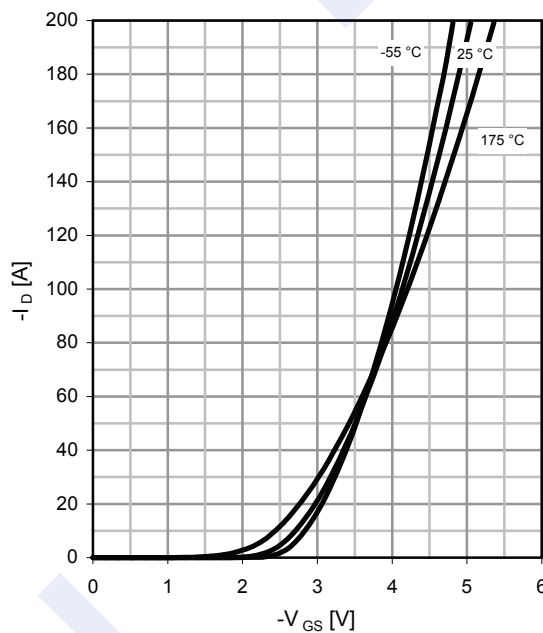
parameter: V_{GS}



7 Typ. transfer characteristics

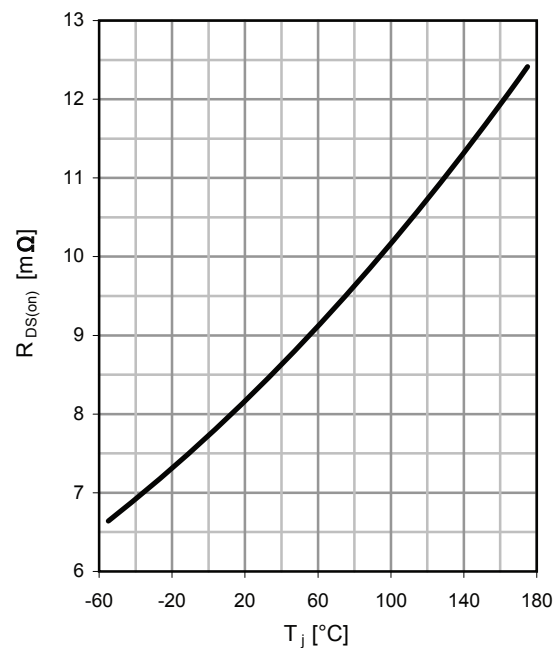
$$I_D = f(V_{GS}); V_{DS} = -6V$$

parameter: T_j



8 Typ. drain-source on-state resistance

$$R_{DS(on)} = f(T_j); I_D = -50A; V_{GS} = -10V$$

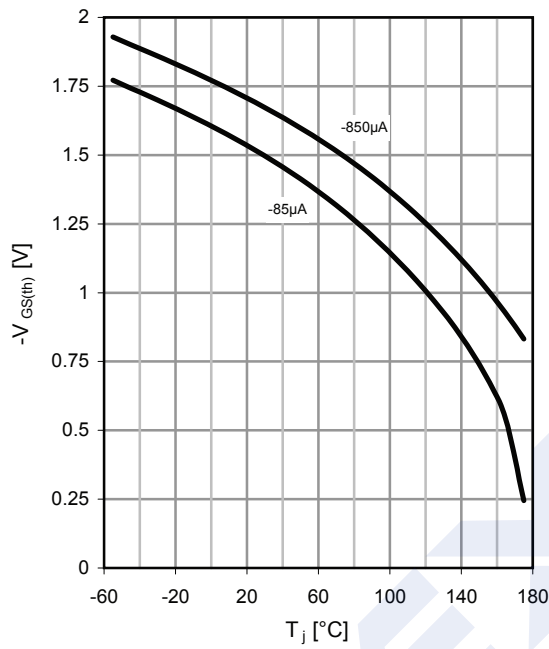


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9 Typ. gate threshold voltage

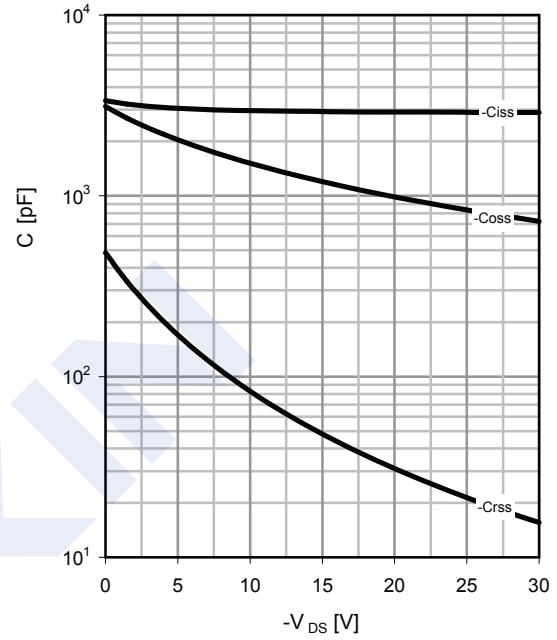
$$V_{GS(th)} = f(T_j); V_{GS} = V_{DS}$$

parameter: I_D



10 Typ. capacitances

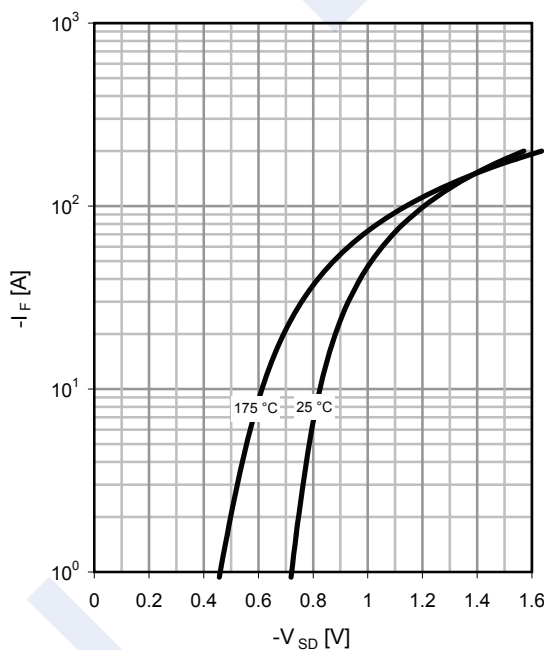
$$C = f(V_{DS}); V_{GS} = 0 V; f = 1 MHz$$



11 Typical forward diode characteristics

$$I_F = f(V_{SD})$$

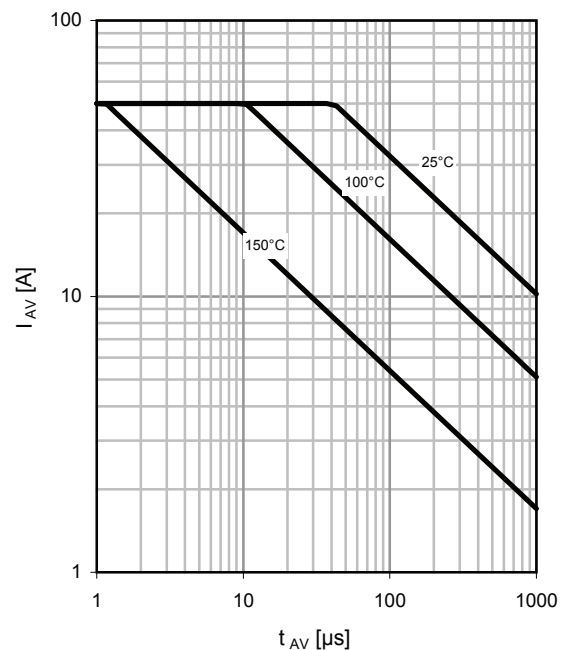
parameter: T_j



12 Avalanche characteristics

$$I_{AS} = f(t_{AV})$$

parameter: $T_{j(start)}$

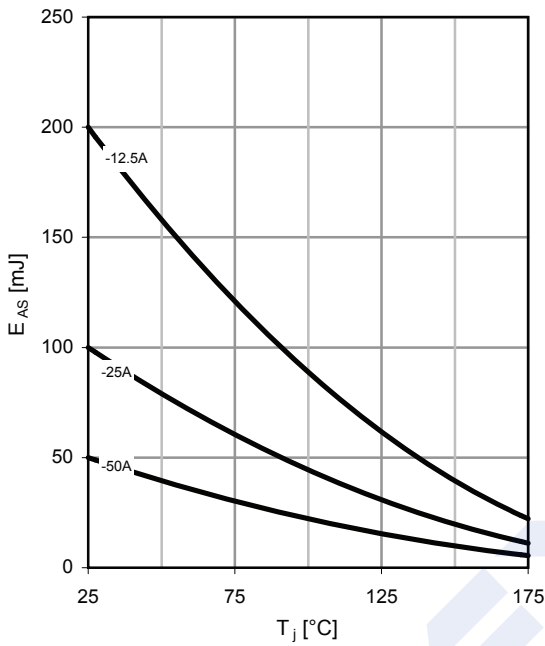


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13 Avalanche energy

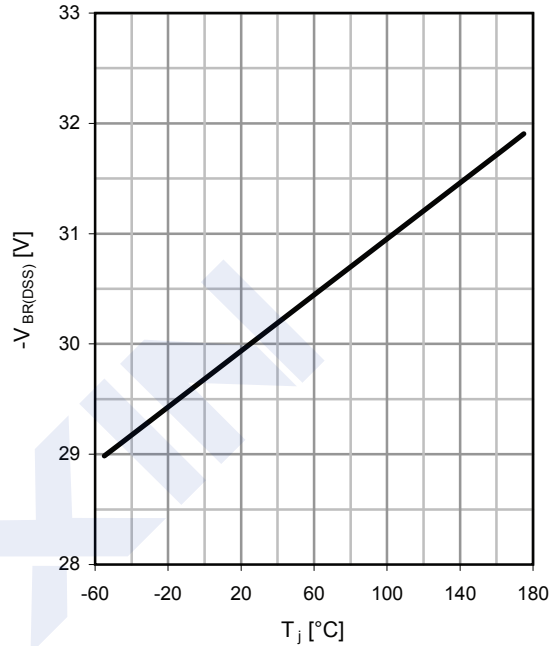
$$E_{AS} = f(T_j)$$

parameter: I_D



14 Drain-source breakdown voltage

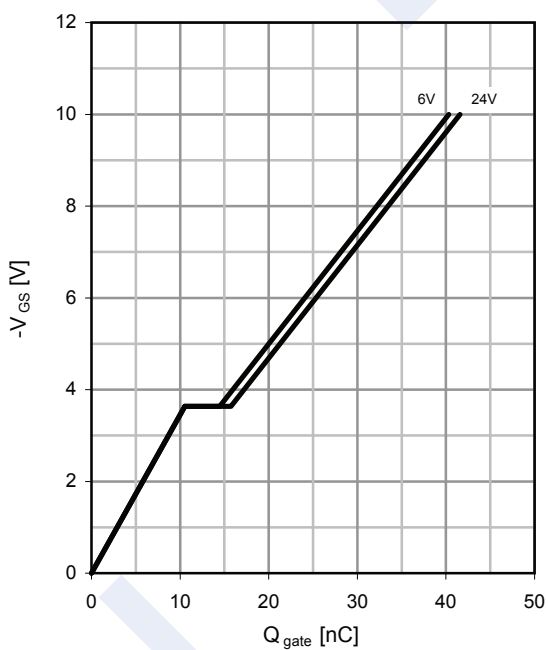
$$V_{BR(DSS)} = f(T_j); I_D = -1mA$$



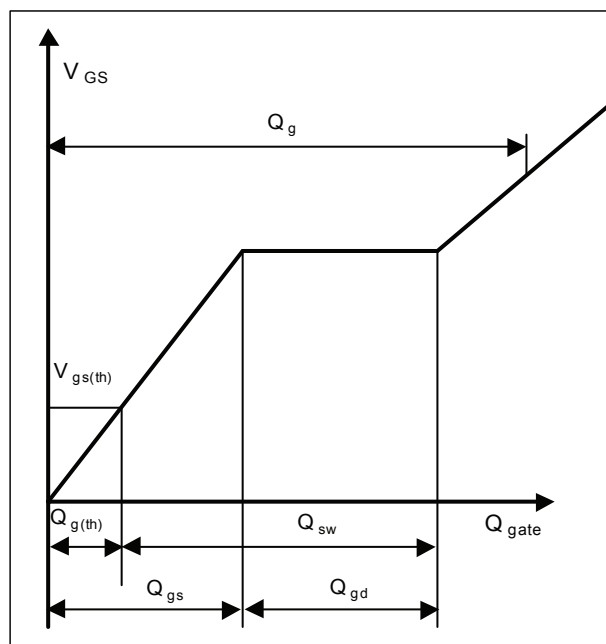
15 Typ. gate charge

$$V_{GS} = f(Q_{gate}); I_D = -50A \text{ pulsed}$$

parameter: V_{DD}



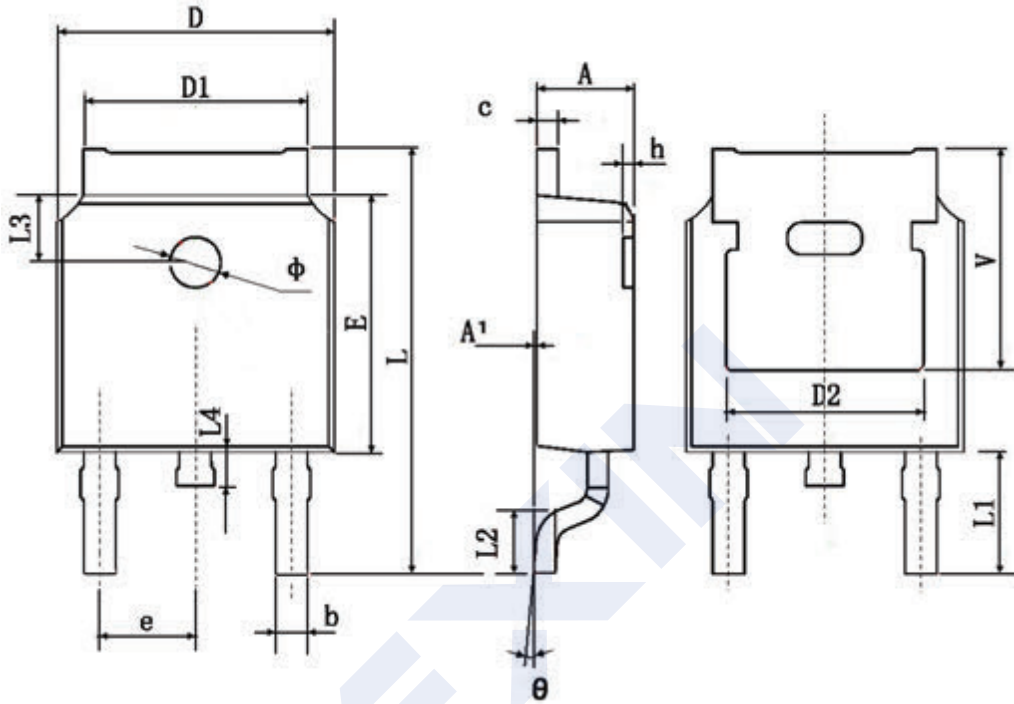
16 Gate charge waveforms



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■ 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.	